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ABSTRACT

The purpose of this study was to examine the relationships of the Instructional Improvement Committee's (IIC) involvement in decision making, the representation of teachers on the IIC, and the effectiveness of the Instruction and Research (I&R) Unit in Individually Guided Education/Multiunit Elementary (IGE/MUS-E) schools. The theoretical base for the study was the model of administration as a social process which states that one's need-dispositions and role expectations ideally converge to produce effective behavior. The IIC was examined as an organizational structure which allows for the inclusion of people in the planning of work goals and in the administration of tasks which affect them to benefit the school. The three major variables (extent of involvement in decision making, representation, and effectiveness) were examined; in addition, six situational variables were identified as being factors which might account for some variation in the dependent variable, effectiveness. Seven hypotheses were developed to test the relationship of extent of involvement in decision making and representation to effectiveness of the I&R unit as perceived by unit teachers and unit leaders. Ancillary questions were posed to compare these perceptions and to examine the relationships of the institutional variables to I&R unit effectiveness. Two instruments were developed to measure the three main variables; data were collected from 48 randomly selected I&R units in IGE/MUS-E schools in 12 states. Nine major conclusions were drawn from the collected data. (BD)

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Technical Report No. 356 (Part 1 of 2 Parts)

PARTICIPATIVE DECISION MAKING IN ICE/MUS-E SCHOOLS

by

Constance M. Nerlinger

Report from the Project on Organization
for Instruction and Administrative
Arrangements

James M. Lipham
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U.S. DEPARTMENT OF HEALTH,
EDUCATION & WELFARE
NATIONAL INSTITUTE OF
EDUCATION

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Center for Cognitive Learning
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Finally, I wish to dedicate this investigation to all children who wait for better schools, to teachers who want to serve and are frustrated at times, and to administrators enmeshed in real situations, in the faith that research will inevitably bring productive change.

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ABSTRACT

The purpose of this study was to examine the relationships of the Instructional Improvement Committee's involvement in decision making, the representation of teachers on the Instructional Improvement Committee (IIC), and the effectiveness of the Instruction and Research (I&R) Unit in Individually Guided Education/Multiunit Elementary Schools.

The theoretical base for this study was the model of administration as a social process which states that one's need-dispositions and role expectations ideally converge to product effective behavior. The IIC was examined as an organizational structure which allows for the inclusion of people in the planning of work goals and in the administration of tasks which affect them to the benefit of the enterprise (the school).

Three major variables were examined. Extent of involvement in decision making was defined at teachers' perceptions of the level to which the IIC participates in decision-making processes in the school. Representation was defined as the degree to which teachers feel they are represented in the decision processes of the IIC through their unit leader who may convey their ideas, opinions, and/or misgivings to the IIC, and thereby influence administrative decision making in response to such input. Effectiveness was defined as the joint accomplishment by unit teachers of the I & R unit's objectives as stated in the description of the IGE/MUS-E model.

In addition, six situational variables were identified as being factors which might account for some variation in the dependent variable, effectiveness. These were: unit load (number of pupils per unit teacher, frequency of I & R unit meetings, released time for the unit leader, and degree status of the unit leader. Total number of pupils in the I & R unit, and the total number of teachers in the unit.

Seven hypotheses were developed to test the relationship of extent of involvement in decision making and representation to effectiveness of the I & R unit as perceived by (1) unit teachers, (2) the unit leader, and (3) both unit teachers and unit leaders. Ancillary questions were posed to compare the perceptions of unit teachers and unit leaders and to examine the relationships of the institutional variables to I & R unit effectiveness.

Two instruments were developed to measure the three main variables. The Decision Involvement and Representation Index allowed each of twenty-five decision items to be assessed as to (1) the extent of involvement by the IIC, and (2) the representation provided by the unit leader. Effectiveness, was assessed by the I & R Unit Operations Questionnaire.

Data were collected from 48 randomly selected I & R units in IGE/MUS-E schools in 12 states.

Pearson product-moment correlations, multiple regression equations, and t-tests were used to test the hypotheses and ancillary questions. Subsidiary information was obtained through the use of factor analysis, multiple stepwise linear regression analysis, and a cross tabulation process. The probability level for all tests of statistical significance was established at .05.

The major conclusions were as follows:

1. Extent of involvement decision making by the IIC was significantly related to effectiveness of the I & R unit.

2. Representation for teachers provided by the unit leader serving on the IIC was significantly related to the effectiveness of the I & R unit.

3. Extent of involvement in decision making and representation together were significantly related to effectiveness of the I & R unit.

4. Extent of involvement in decision making and representation, the two independent variables, were closely related constructs.

5. Frequency of meetings and total number of pupils in a unit were related to the effectiveness of the I & R unit, but only after accounting for the two main independent variables. These two situational variables did not contribute greatly to the variance of effectiveness.

6. Teachers perceived themselves to be more fully represented than involved in the decision-making process.

7. Extent of involvement in decision making by the IIC schools was perceived by unit leaders and teachers as beyond the stage of providing information--toward the level of developing possible alternatives.

8. Representation for teachers are provided by the unit leader serving on the IIC was perceived as moderate by respondents in this study.

9. Effectiveness of the I & R unit was perceived by unit leaders and teachers as between "somewhat effective" to "effective."

CHAPTER I

INTRODUCTION TO THE STUDY

The purpose of this study was to examine the relationships of the Instructional Improvement Committee's involvement in decision making, the representation of teachers on the Instructional Improvement Committee, and the effectiveness of the Instruction and Research Unit in Individually Guided Multiunit Elementary Schools. "In the MUS-E organizational structure provisions are made for accountability, responsibility, and participation in decision making by all the staff of a school system."[1] The Instructional Improvement Committee embodies these functions at the building level. It is charged with making decisions concerning the instructional program of the school. One of its innovative features is the regularized inclusion of teachers as unit leaders in the kinds of decisions which formerly were the prerogative of the principal. This study was done to find out if teachers' increased involvement in decision making through their unit leader as a representative on the Instructional Improvement Committee bears a positive relationship to the effectiveness of the Instructional and Research Unit.

---

[1] Herbert J. Klausmeier, et al., INDIVIDUALLY GUIDED EDUCATION AND THE MULTIUNIT ELEMENTARY SCHOOL, (Madison, Wisconsin: Research and Development Center for Cognitive Learning, 1971), p. 16.

In this chapter, decision making, representation, and effectiveness are discussed. Decision making as a process is analyzed and related to participation by workers in the decisions which involve the administration of their tasks. Representation is examined as a device to allow worker input in decision making when it would not be feasible for the total work force to be involved in this process. Effectiveness is defined in relation to organizational theory, and the research on effectiveness in IGE/MUS-E's is examined.

Background of the Study

Individually Guided Education (IGE) grew out of a project, called Maximizing Opportunities for Development and Experimentation in Learning in the Schools, under the direction of Herbert J. Klausmeier at the University of Wisconsin.[2] This project was an answer to some perceived deficiencies in practices common in our elementary schools. These practices were thought to be at the root of an inefficient educational process. They may be summarized as follows: (1) lack of individualization in pupil instruction, (2) use of rigidly graded curricular materials without consideration of individual pupil needs, (3) an organizational pattern which isolates the principal from the instructional process, (4) inadequate use of teachers with widely differing abilities and interests, (5) lack of provision for shared decision making in planning and evaluation for a school, (6) insufficient provision for research and development to improve education, and, (7) failure to communicate with parents and involve them positively in the educational process.[3]

---

[2] Herbert J. Klausmeier, William L. Goodwin, John Prasch, and Max R. Goodson, PROJECT MODELS: MAXIMIZING OPPORTUNITIES FOR DEVELOPMENT AND EXPERIMENTATION IN LEARNING IN THE SCHOOLS, (Madison, Wisconsin: Research and Development Center for Cognitive Learning, Occasional Paper No. 3, 1966).

As an answer to these shortcomings, seven components of IGE were developed and refined through application. These seven components were conceptualized to be put into operation in a model for an elementary school which would provide individually guided instruction and was to be organized in the multiunit pattern (See Figure 1). The acronym, IGE/MUS-E, then, means Individually Guided Education, Multiunit School-Elementary.

Practical application of IGE/MUS-E began in 1965-67 in the schools of four Wisconsin cities when thirteen non-graded units were implemented.[4] These units were given the name Instruction and Research Units (I & R Units) in 1967-68, and the 'multiunit' term was used for schools having the unit organizational pattern. Also, two decision-sharing administrative bodies, the Instructional Improvement Committee (IIC) at the building level and the System-wide Program Committee (SPC) at the district level were formed. Through this synthesis of theory, research, and practice, MUS-E developed as a new organizational structure which continues to be refined.

---

[3] Herbert J. Klausmeier and James M. Lipham, "Development and Description of IGE," in THE PRINCIPAL AND INDIVIDUALLY GUIDED EDUCATION, James M. Lipham and Marvin J. Fruth, (Reading, Mass.: Addison Wesley, 1976) Chapt. I (In Press).

[4] Ibid., pp. 10-11.

4

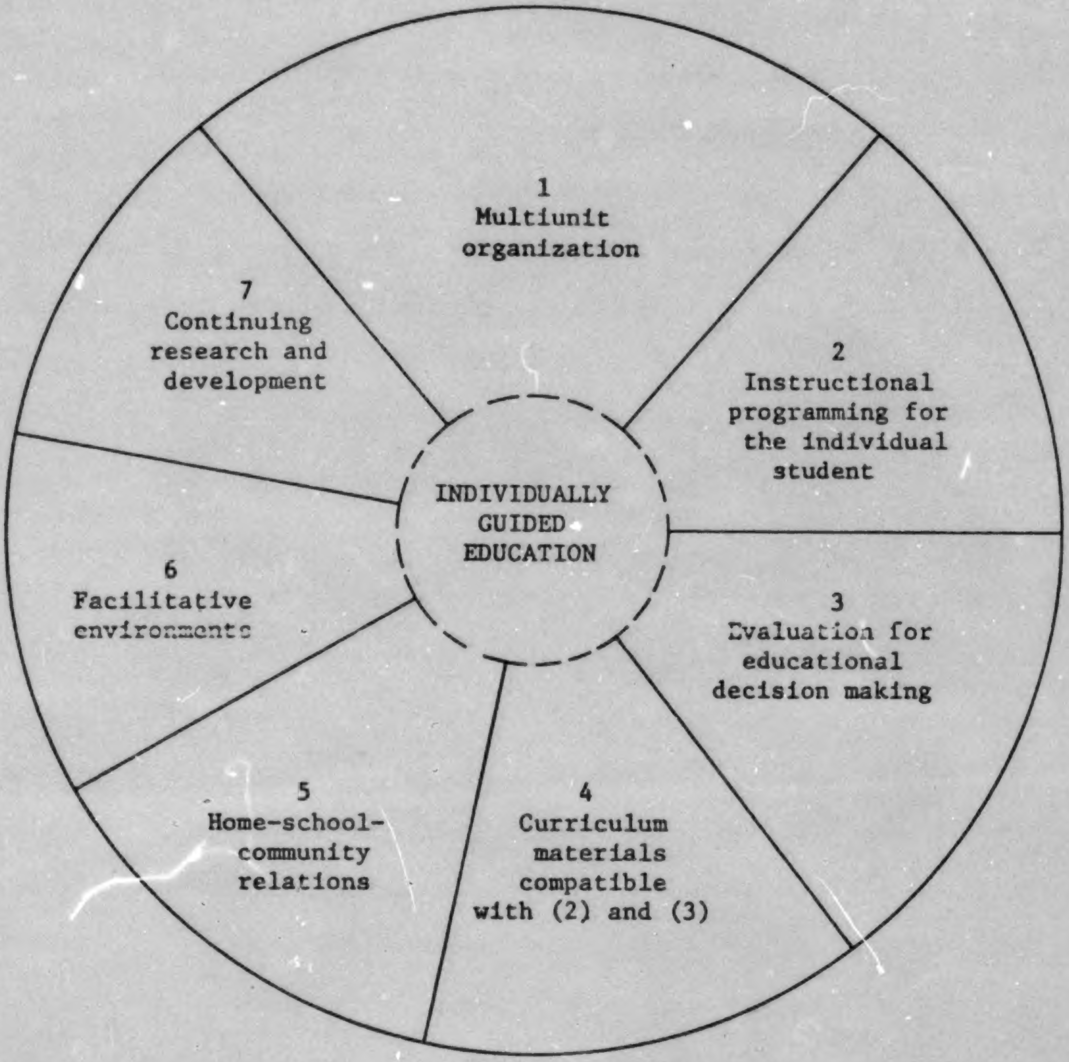
1
Multiunit organization
2
Instructional programming for the individual student
3
Evaluation for educational decision making
4
Curriculum materials compatible with (2) and (3)
5
Home-school-community relations
6
Facilitative environments
7
Continuing research and development
INDIVIDUALLY GUIDED EDUCATION

Figure 1. COMPONENTS OF INDIVIDUALLY GUIDED EDUCATION

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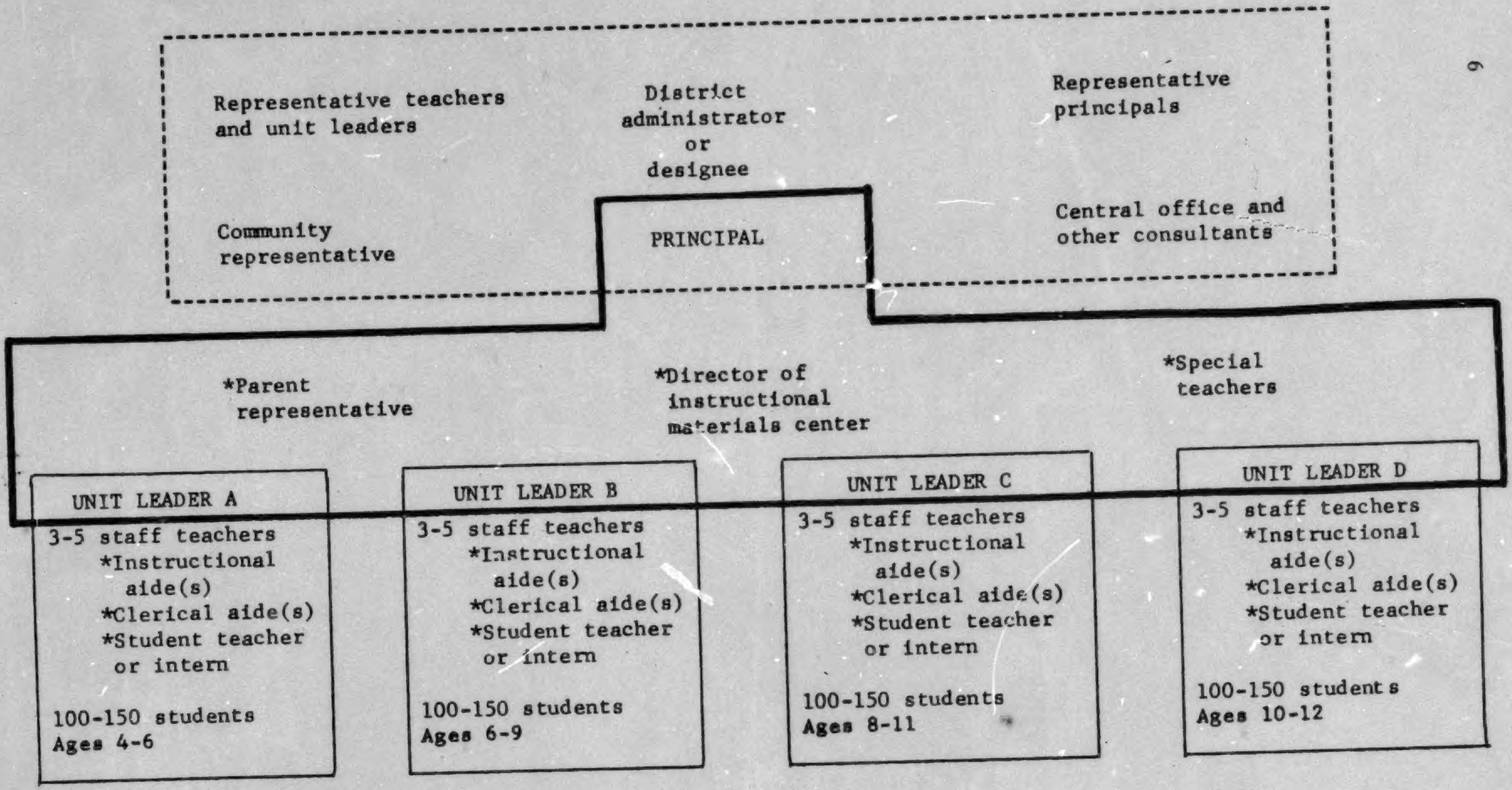
[5] Based on Klausmeier, H. J., Quilling, M. R., Sorenson, J. S., Way, R. S. and Glasrud, G. R. Individually Guided Education and the Multiunit School: Guildeines for Implementation. Madison: Wisconsin Research and Development Center for Cognitive Learning, 1971, Ch. 2.

In 1968-69, the Wisconsin Department of Public Instruction chose MUS-E for statewide demonstration and implementation. From this base, IGE/MUS-E's increased in number from 50 in 1969-70 to over 2,000 in 1974-75. Future growth seems assured with many agencies involved in the support and implementation of these schools.

In its origin, IGE/MUS-E was conceived to answer instructional needs. An appropriate instructional programming model (IPM) was developed and elaborated, as well as the other components of IGE. As a setting for its implementation and development, a facilitative organizational pattern for role definition and differentiation, freer communication, and shared decision making evolved. A prototypic organizational pattern for an IGE/MUS-E school which would provide such a setting is shown in Figure 2.

Participative decision making takes place at three levels in the multiunit organizational pattern. At the I & R level, the unit leader, teachers, and aides make decisions about instructional resources and activities, and contribute their ideas and input to the unit leader to be relayed to the IIC. The IIC functions as a decision-making body at the school level. Some of the members of the IIC serve on the SPC, consisting of central office, principals, unit leaders, and teachers, a body which deals with problems that involve the entire district.

Focusing on the decision process at the school level, the MUS-E model provides that decisions should not necessarily move from top to the bottom of the organizational hierarchy, but should represent


Representative teachers and unit leaders
District administrator or designee
Representative principals
Community representative
PRINCIPAL
Central office and other consultants
*Parent representative
*Director of instructional materials center
*Special teachers
UNIT LEADER A
3-5 staff teachers
*Instructional aide(s)
*Clerical aide(s)
*Student teacher or intern
100-150 students
Ages 4-6
UNIT LEADER B
3-5 staff teachers
*Instructional aide(s)
*Clerical aide(s)
*Student teacher or intern
100-150 students
Ages 6-9
UNIT LEADER C
3-5 staff teachers
*Instructional aide(s)
*Clerical aide(s)
*Student teacher or intern
100-150 students
Ages 8-11
UNIT LEADER D
3-5 staff teachers
*Instructional aide(s)
*Clerical aide(s)
*Student teacher or intern
100-150 students
Ages 10-12
Instruction and Research Unit
Instructional Improvement Committee
Systemwide Program Committee

*Inclusion of these persons will vary according to particular school settings.

Figure 2 Multiunit organization of an IGE School of 400-600 students. (Adapted from: Herbert J. Klausmeier, Richard G. Morrow, and James E. Walter, Individually Guided Education in the Multiunit School, (Madison: Wisconsin Research and Development Center for Cognitive Learning, 1968).

a composite decision reached after staff interaction and discussion. The IIC should represent the expertise of the total staff and students.

If one examines the communication model for an open IGE/MUS-E shown in Figure 3, the change in communication pattern from the traditionally organized contained classroom to the open plan with differentiated staff can be visualized. The individual teacher receives the impact of a wide range of pupil needs: her homeroom pupils', her unit pupils' (through the I & R decision process), and those of other unit's pupils' (through IIC communication). Teachers in an open unit communicate more freely verbally and visually than they could in contained classrooms. The principal is more exposed to communication from some teachers (unit leaders), and less exposed to others. The unit leader is the linking pin between her staff and the IIC; she represents unit teachers and pupils. On the representation skill of the unit leader depends the democratic, organic, decision-sharing process which should take place in the IIC.

The IIC is charged with planning and coordinating instructional concerns. Its functions are:

> (1) stating the educational objectives and outlining the educational program for the entire school building; (2) interpreting and implementing systemwide and statewide policies that affect the educational program of the building; (3) coordinating the activities of the I & R units to achieve continuity in all curriculum areas and to arrange for the use of facilities, time, materials, etc., that the Units do not manage independently; and (4) formulating and implementing the inservice program.[6]

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[6] Ibid., p. 8.

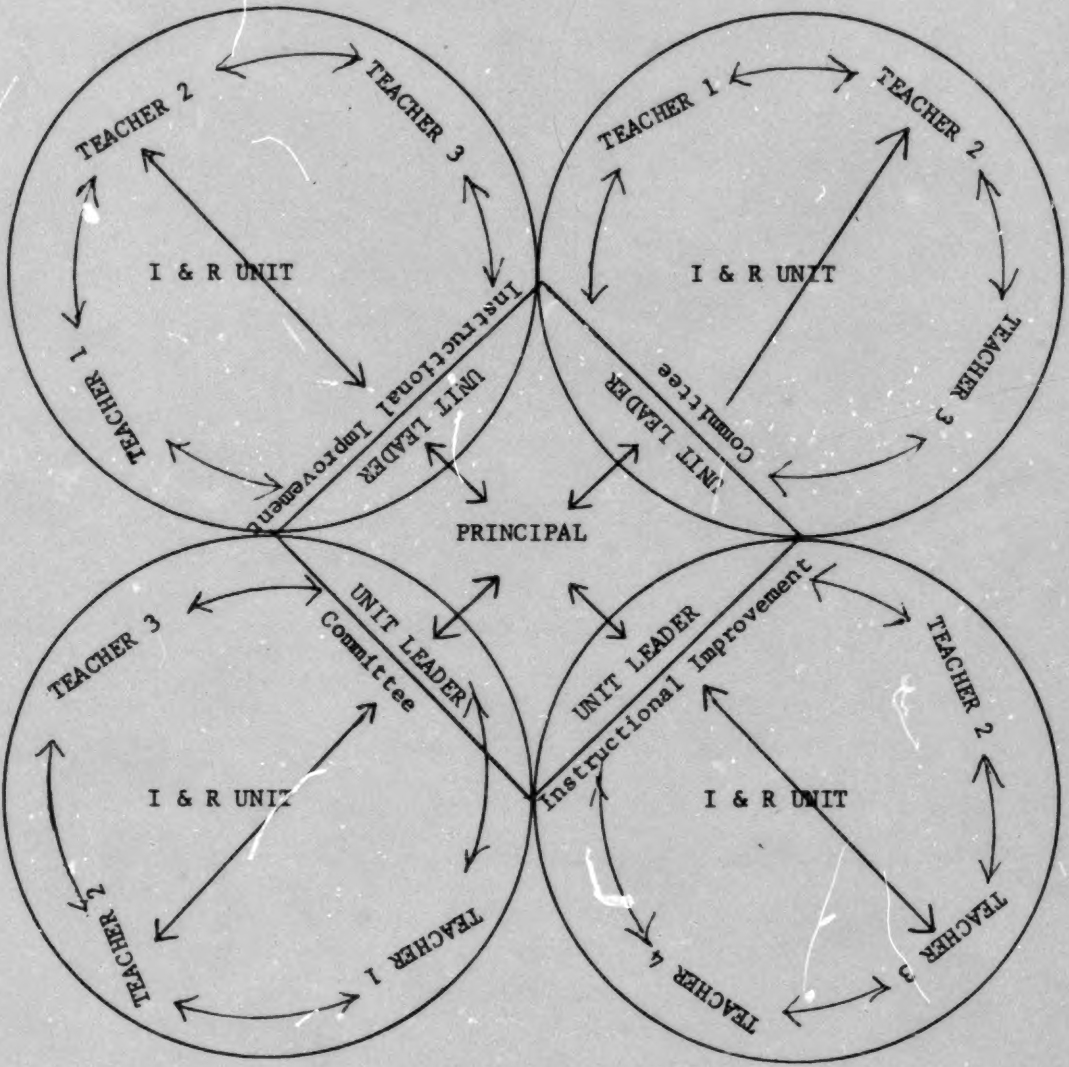
TEACHER 2
TEACHER 3
TEACHER 1
I & R UNIT
Instructional Improvement
UNIT LEADER
TEACHER 1
TEACHER 2
TEACHER 3
I & R UNIT
Committee
UNIT LEADER
PRINCIPAL
TEACHER 3
TEACHER 2
TEACHER 1
I & R UNIT
UNIT LEADER
Committee
UNIT LEADER
Instructional Improvement
TEACHER 2
TEACHER 3
TEACHER 4
I & R UNIT

Figure 3. INTERCOMMUNICATION PATTERNS IN THE MULTIUNIT OPEN SCHOOL

The unit leaders and the principal, as chairperson, comprise the IIC, which should meet at least once each week. Planning the instructional program is the main task of the IIC and their major efforts should be devoted to that area. The unit leader should take the consensus of the unit's attitudes and suggestions to the IIC and carry the decisions of that body back to the I & R unit.

The I & R Unit consists of a unit leader, several staff teachers, an instructional or secretarial aide, student teacher personnel, and 90-150 pupils. Its main function is to carry out the instructional program and some other important auxilliary functions, such as: home-school-community relations, development of long range instructional plans, an evaluation process, and means for self-improvement. 'Research' is included in its title because it is expected to plan and conduct research on its own and cooperatively with other agencies. The secondary functions are necessary adjuncts to the main function for unit success.

The I & R unit works together to implement the Instructional Programming Model (IPM) which requires initial pupil assessment, setting up individual objectives, placing of pupils in the appropriate activities, post assessing, and recycling the child again according to his achievement, learning style, and preferences. The success of the I & R unit depends on teamwork.

It was the purpose of this study to examine the relationships between: the extent of involvement of the IIC in decision making, the representation of teachers in that process through their unit leader, and the effectiveness of the I & R unit.

Review of the Literature

This section will contain a discussion of related literature on the three variables of concern to the main study and on the incidental variables of concern to ancillary question 4. The four parts of this section will be titled: (1) Decision Making and Participation, (2) Representation, (3) Effectiveness, and (4) Situational Variables with Possible Influence on Unit Effectiveness.

Decision Making and Participation

Decision theory is a major concern in administration. In early writings, the functions of administration were divided into categories according to how an administrator spent his time. One such list was as follows: planning, organizing, staffing, directing, coordinating, reporting, and budgeting.[7]

As the modern writers examined these functions, the growing consensus was that an activity central to all administrative functions was the act of decision making. Indeed, theorists discovered that decision making, itself, could be broken down into stages and thereby studied more systematically and scientifically. Recently, parts of the decision-making process have been mathematically analyzed by computers, aiding the decision maker who must select from a set of alternatives needing technical complex analyses of resources, time, and cost.

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[7] For a summary table of lists of administrative functions compiled by writers over the period from 1916 to 1967, see Table 2-1; "Descriptive terms used by various writers to suggest the functions of the administrator," from Stephen K. Knezevich, ADMINISTRATION OF PUBLIC EDUCATION, Second Edition, (New York: Harper and Row, 1969), p. 28.

This study dealt with the questions of how and by whom decisions are made. Dill broke the decision process into four phases: (1) agenda building, which is the defining of tasks and goals, and the assigning of priorities; (2) search, which is the exploration and evaluation of several alternatives; (3) commitment, which is the choosing of the best alternative; (4) evaluation, which is an examination of the results of the decision.[8] He described the scope of decision making as the answer to these questions: Who made the decision? How was it made? How could the process be improved? He proposed that decision making has a long-range impact on people--on the formal and informal structure of the organization. He wrote this about participative decision making:

> Other problems in theory and practice have arisen from a failure to distinguish organized participative patterns of decision making from laissez-faire approaches. Both give employees a chance to help make decisions, but only the first recognizes the need for some central direction and action in organizational decision making. The two approaches are not equivalent.[9]

---

[8] William C. Dill, "Decision Making," BEHAVIORAL SCIENCE AND EDUCATIONAL ADMINISTRATION, 63rd Yearbook, Part II, National Society for the Study of Education, (Chicago, Illinois: University of Chicago Press, 1964), Chapter 9, pp. 199-222.

[9] Ibid., p. 215.

This opinion would seem to indicate that there is a need for organized participative decision making and that the who and how of the decision process would have an impact on people in an organization.

Lipham in writing about the process of decision making, broke the decision dynamic into stages and incorporated these steps into a model: (1) Awareness--a first step, the fine art of finding the appropriate decisions to undertake; (2) Information--research, information, communicating, how much or how little data to assemble; (3) Competing Alternatives--an assessment of possible courses of action as to their outcomes in terms of relevance, efficiency, effectiveness, etc.; (4) Choice--act of deciding on one alternative involving judgment either personal or through formal organizational or informal group processes which would be a collaborative decision; (5) Estimated Outcome States--a prediction of how the choice will affect people and groups in an organization.[10]

Lipham also related the question of who makes decisions with the question of what is the extent of that involvement and has pointed out that an individual in an organization may be partially involved in the decision-making process or totally involved. He gave as an example a scale from an instrument developed by Wendlandt, with a range from 5 to 1, to rate decision involvement: 5. Make the decision, 4. Recommend an alternative, 3. Develop possible alternatives,

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[10] James M. Lipham and James A. Hoeh, Jr., THE PRINCIPALSHIP: FOUNDATIONS AND FUNCTIONS, (New York: Harper & Row, 1974), pp. 155-161.

2. Provide information only, and 1. No involvement.[11] Merely stating that staff members of an organization are involved in decisions does not completely describe the process. One must further ask, how involved, to what extent are different levels of an organizational hierarchy included in decision making. When that question is answered, an accurate picture of the organizational process may be obtained.

Granted that participative decision making may take place and the extent of involvement may be analyzed, one needs to examine what research has had to say about the relationship of decision sharing to the variable of effectiveness or productivity in organizations.

Vroom, in a 1959 study, investigated the relationships between participation and authoritarian personality as independent variables, and worker attitudes and effective performance as dependent variables. The strongest positive relationship was found between worker participation in decision making and job attitude and effectiveness when a strong need for independence resides in a worker and he has a personality rating low on authoritarianism. This study, selected for a Ford Foundation Award, was conducted in an industrial setting under the guidance of the Psychology Department of the University of Michigan.[12]

Coch and French, in an earlier study, related efficiency, turnover, and morale with different degrees of participation in decision making by the workers. In this analysis, decision participation was broken down into three categories: (1) no participation, (2) participation through representation, and (3) total participation. The group of workers given total participation had higher outputs than the other groups, although the group participating through representation had a higher output than the group with no participation at all.[13]

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[11] Ibid., pp. 165-166.

[12] Victor H. Vroom, SOME PERSONALITY DETERMINANTS OF THE EFFECTS OF PARTICIPATION, (Englewood Cliffs, New Jersey: Prentice Hall, 1960).

A more recent study, reported by Tannenbaum, was conducted over a four-year period in a plastics company; it attempted to compare three models for the management of workers. They were described as exploitive-authoritative, benevolent-authoritative, and consultative-participative. As a result of the participative model the experimental group increased communication, organizational control, and effort. This research effort, initiated by Likert and Kahn, involved Norman, Haven, Pelz, Seashore, and Tannenbaum.[14]

Much research on participative decision making in schools has investigated the relationship between participation and satisfaction. This is true probably because it is difficult to measure teacher production, output, or effectiveness as a dependent variable. In education these entities are hard to define and quantify, while in a business or industry output is fairly tangible and measurable. One study did make an attempt to relate these variables in a case study carried out in a junior high school. Schmuck and Blumberg wrote that a representative body of teachers discussed problems ranging from curriculum and instruction to the employment of teachers. The conclusions of the experiment were stated in these words by the researchers: "Participative decision making process in organizations seems to make for more productive problem solving and an enhanced sense of satifaction and organizational identity...We view movement in the participative direction as increasing the likelihood of organizational productivity."[15]

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[13] Lester Coch and John French, "Overcoming Resistance to Change," READINGS IN SOCIAL PSYCHOLOGY, Guy E. Swanson, et al., New York: Holt, 1952), pp. 474-491.

[14] Arnold S. Tannenbaum, SOCIAL PSYCHOLOGY OF THE WORK ORGANIZATION, (Belmont, California: Wadsworth, 1966).

In summary, there is supportive research in industry to show a positive relationship between participative decision making and production. Considerable research in school settings related decision sharing positively to teacher attitude[16] and some research has been done to tie participation to enhanced problem solving by teachers.

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[15] Ibid., p. 312.

[16] Richard A. Schmuck and Arthur Blumberg, "Teacher Participation in Organizational Decisions," NASSP BULLETIN, 53, (October, 1969), p. 104.

Francis S. Chase, "The Teacher and Policy Making," ADMINISTRATORS NOTEBOOK, (May, 1952), 1-4.

Chiranjii Sharma, "Who Shall Make Decisions," ADMINISTRATORS NOTEBOOK, (April, 1955), 1-4.

James A. Belasco and Joseph A. Alluto, "Decisional Participation and Teacher Satisfaction," EDUCATIONAL ADMINISTRATION QUARTERLY, (Winter, 1972), 8, pp. 44-58.

Representation

Social scientists have written extensively on inclusion of the worker in setting of goals and their integration within the organization. Regarding the inclusion of workers in decision making, Etzioni made these observations:

> The decision making units are an integral part of the cybernetic centers of the controlling overlayers of societal actors; thus theories of society which exclude them, depict societies and collectivities as passive units which interact or integrate but have no control of themselves or their interrelations.[17]

This statement could evoke visionsof an organizational chart of the traditional school, which commonly places teachers in a passive role in the setting of goals or shaping of policy. Etzioni also wrote, "Ultimately, there is no way for a societal structure to discover the members' needs and adapt to them without the participation of the members in shaping and reshaping the structure."[18] This view is reinforced by a modern economist, Galbraith, who wrote similarly:

> The pursuit of the goals of organization because of the prospect or in the hope of accommodating these goals more closely to the participant's preference is an important motivation...What is called an effective organization is one which, in substantial measure, has a motivational system that is internally reinforcing.[19]

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[17] Amitai Etzioni, THE ACTIVE SOCIETY, (New York: The Free Press, 1968), p. 253.

[18] Ibid., p. 626.

[19] John Kenneth Galbraith, THE NEW INDUSTRIAL STATE, (New York: Houghton Mifflin, 1967), p. 143.

These statements provide the basis for research on representation.

Representation of workers in the United States has been operationalized most often through labor unions. In theory, it emerges as the responsiveness of management. Bakke and Argyris dealt with it in the seven theorems which they considered the essential organizational processes. Among the processes is communication, which is needed "to provide for the exchange of information, ideas, feelings, and values."[20] Bakke stated further,

> It may be pointed out, however, that the empirical concept of the authority process includes both direction downwards from those placed relatively higher in authority and direction upwards (representation) from those placed relatively lower in the authority hierarchy.[21]

European writers have also studied the concept of representation. These studies include historical background, surveys, and commentary on workers' councils operating in industry in certain countries--France, Belgium, Germany, Great Britain, and Yugoslavia. Texts by Emergy and Thorsrud,[22] Kolaja,[23] and Sturmthal[24] describe workers' councils through which industrial workers are said to participate in decision making. The general conclusions from these authors is that, while beginnings in genuine worker participation are being made through workers' councils, meaningful participation has often eluded workers because of the intricacies of implementation, the reluctance of administration to allow it, and workers themselves to assume the responsibility.

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[20] E. Wight Bakke and Chris Argyris, ORGANIZATIONAL STRUCTURE AND DYNAMICS, (New Haven, Conn.: Yale Labor and Management Center, 1954), p. 11.

[21] Ibid., p. 12.

[22] F. E. Emergy and Einar Thorsrud, FORM AND CONTENT IN INDUSTRIAL DEMOCRACY, (London: Tavistock, 1969).

[23] J. Kolaja, WORKERS COUNCILS, THE YUGOSLAV EXPERIENCE, (New York: Praeger, 1966).

[24] Adolf Sturmthal, WORKERS COUNCILS, (Cambridge, Mass.: Harvard University Press, 1964).

Teachers also have voiced their hope for representation in decision making. The NEA's publication, Today's Education, indicated the desire of teachers for more involvement in curricular decisions was up six percent from 37.3 percent in 1968 to 43.3 percent in 1972.[25] If such involvement is to be regularized, then more production and greater satisfaction on the part of staff should occur to justify such participation.

Effectiveness

This section will first define and examine effectiveness in organizations as a construct embedded in social systems theory in administration. Then, effectiveness will be analyzed in relationship to participative decision making and representation as it appeared in research studies, particularly in IGE/MUS-E's.

The assumption is made that the school is a social system and the MUS-E consists of subunits with in this system. The IIC is one such embedded small group with members who make decisions which affect the I & R units which are also subunits having members who work together to accomplish joint tasks. The effectiveness of the I & R unit constitutes the major dependent variable. Barnard said of such a cooperative system: "When the purpose of a system of cooperation is attained we say that the cooperation was effective."[26] It only remains to define the purpose of a system. This is not always easily done. Barnard wrote of this dilemma:

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[25] ________, National Education Association, "Research," TODAY'S EDUCATION, The Journal of the NEA, February, 1973, Vol. 62, No. 2, p. 11.

> What we mean by effectiveness of cooperation is the accomplishment of the recognized objectives of cooperative action. If it is a bridge, effectiveness is easy to see, if the objective is non-physical it is not so obvious.[27]

Although the IGE/MUS-E model includes clearly stated behavioral objectives for the members of an I & R unit, one may still question whether or not effectiveness should include only a set of static job description type behavioral objectives or also some further evidence of effectiveness. Common group goals should emerge and be satisfied, so role definitions are not fulfilled with no results accomplished.

Stogdill also proposed a definition of effectiveness: "The structure of a group is not an end in itself, but facilitates the accomplishment of the group purpose. It is generally assumed that the achievement of a group can be described in terms of its productivity or effectiveness in accomplishing the group purpose."[28] From Getzels, Lipham, and Campbell, a definition, in terms of role, was stated as follows: "Effectiveness is a measure of the concordance of role behavior and role expectations."[29] The closer the congruence of role expectations of the organization and role expectations as perceived by the role incumbents, then the greater the effectiveness of organizational goal accomplishment should become. This theory also would lead one to propose that if role expectations are defined by joint management and worker planning, then the role expectations and the need-dispositions of the participants will be congruent.

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[26] Chester I. Barnard, THE FUNCTIONS OF THE EXECUTIVE, (Cambridge, Mass.: Harvard University Press, 1938), p. 19.

[27] Ibid., p. 43.

The widely utilized model of educational administration as a social process, as shown in Figure 4, serves as the theoretical foundation for this study:

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[28] Ralph M. Stogdill, INDIVIDUAL BEHAVIOR AND GROUF BEHAVIOR AND GROUP ACHIEVEMENT, (New York: Oxford University Press, 1959), p. 196.

[29] Jacob W. Getzels, James M. Lipham, and Roald F. Campbell, EDUCATIONAL ADMINISTRATION AS A SOCIAL PROCESS, New York: Harper & Row, 1968), p. 129.

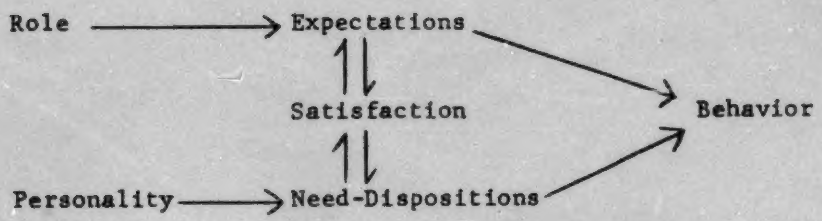

Figure 4. Relation of role expectations and need-dispositions to effectiveness, efficiency, and satisfaction. (Adapted from J. W. Getzels and E. G. Guba, "Social Behavior and the Administrative Process," SCHOOL REVIEW, 65 (1967), 433)[30]

Considerable effort has been devoted to defining and operationalizing effectiveness in research studies done in IGE/MUS-E's under the auspices of the Research and Development Center at the University of Wisconsin. The problem of a careful definition of the role of the teacher, unit leader, or of a body such as the IIC has been partially solved by the IGE/MUS-E model which specifically delineates the tasks of role incumbents and the decision bodies. This makes the operationalizing of the variable of effectiveness more obvious, if fulfilling the role description is accepted as a definition of effectiveness. Some have gone a step further and reasoned that effectiveness on the part of teachers must be measured by pupil achievement. To this the author must agree with one reservation--the variables which enter into the picture when pupil achievement is considered as a dependent variable are far reaching and ephemeral, so that the step-by-step linkage of effectiveness from attitude, morale, to role congruence, to pupil achievement must be approached with scientific caution.

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[30] Ibid., p. 128.

One researcher in IGE/MUS-E's, Loose, analyzed the decisions made by the IIC and discovered that 60 percent were made by the principal.[31] Herrick found the decentralization in IGE/MUS-E's to have a significant relationship to teacher motivation.[32] Evers completed a study in multiunit schools to uncover the relationships between the effectiveness of an I & R unit and interpersonal behaviors of the unit leader. She found that when regression equations were used, only instrumental leadership behavior contributed to unit effectiveness. Using Pearson product-moment correlation techniques, all three measures of leadership behavior (instrumental, supportive, and participative) were found to correlate significantly with unit effectiveness. The compatibility of unit members was only a factor when found in combination with the significant leader behaviors. No significant relationship was found between unit effectiveness and the number of members in a unit or the number of hours an I & R unit meets. A significant correlation was found between the percentage of staff who had participated in staff development activities and some measures of effectiveness, but not instructional effectiveness.[33]

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[31] Caroline Loose, "Decision-making Patterns and Roles in the IIC," Doctoral dissertation, (Milwaukee, Wisconsin: University of Wisconsin, 1973).

[32] H. Scott Herrick, "The Relationship of Organizational Structure to Teacher Motivation in Traditional and Multiunit Elementary Schools," Doctoral dissertation, (Madison, Wisconsin: University of Wisconsin, 1974).

Walter did a study based on Hage's axiomatic theory to relate adaptiveness and organizational structure. Centralization, which was operationalized as the levels at which decisions are made and the scope of these decisions, was one of the independent variables. Adaptiveness was the dependent variable. Adaptiveness was operationalized to be thirteen categories of individualization. The results of the study are complicated since there were six independent variables, and the dependent variable, adaptiveness was factored into three entities. Centralization is the independent variable important to this study since centralization describes decision making and where it takes place. There was a positive relationship between centralization and adaptiveness when adaptiveness was measured as student activities and individualization. There was no relationship between centralization and adaptiveness when measured as teacher activities. Walter made this comment: "One also suspects that teachers do not expect to be involved in decisions about organizational resources. There is little in their training that would equip them to be involved in such matters.[34] This is a controversial statement, and the issue is one which will be increasingly challenged. If organizational resources mean budgets, new curricular materials, instructional programs, and hiring of staff, these resources may be construed to affect the task of teaching and teachers may wish to participate in decisions concerning such resources.

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[33] Nancy A. Evers, "An Analysis of the Relationship of the Multi unit Elementary School's Instruction and Research Unit and Interpersonal Behaviors," Doctoral dissertation, (Madison, Wisconsin: University of Wisconsin, 1974).

[34] James E. Walter, "The Relationship of Organizational Structure to Adaptiveness in Elementary Schools," Doctoral dissertation, (Madison, Wisconsin: University of Wisconsin, 1973), p. 106.

Situational Variables With Possible Influence on Unit Effectiveness

The situational variables selected as having possible influence on the dependent variable, effectiveness, were (1) class load of the unit, (2) frequency of I & R unit meetings, (3) released time for unit leader, and (4) degree status of unit leader.

These variables were easily quantified and are similar to those dealt with in Evers' study in which (1) the number of I & R unit members, (2) number of hours per week an I & R unit meets, and (3) staff participation in IGE/MUS-E development activities were related to unit effectiveness. This type of variable was titled 'situational' in the present study. Two of the situational variables investigated by Evers did not show any relationship to I & R unit effectiveness. These were the number of hours per week an I & R unit meets and the number of members in an I & R unit. One situational variable, participation in IGE/MUS-E staff development activities was found to be significantly related to total I & R unit effectiveness, and specifically to those portions of unit effectiveness designated as I & R unit organizational operations and school-community relations. These portions of I & R unit effectiveness are not concerned with instruction, but with the carrying out of the IGE/MUS-E organizational model which is a means to an end, so to speak--the end or goal being instructional effectiveness. Instructional effectiveness of the I & R unit, then, was not related significantly to any of the situational variables in Evers' study.[35]

The present investigation chose four situational variables as possibly related to I & R unit effectiveness. Class load is such a factor, often considered in teacher negotiations as bearing on instructional effectiveness. In the present study, it was operationalized as class load of unit. Released time for unit leader and degree status of unit leader were chosen because the IGE/MUS-E literature proposed that a unit leader be provided released time[36] and that he or she either have or be working toward a master's degree.[37] It was hypothesized that a master's degree might indicate an in-depth, long-term commitment to teaching and measurable expertise on the part of the unit leader and that commitment and expertise might relate to unit effectiveness. The number of times the I & R unit meets is another testing of the IGE/MUS-E model which in its time stipulation seemed to suggest two to three meetings per week.[38]

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[35] Evers, op. cit., p. 119.

[36] Klausmeier, et al., op. cit., p. 32.

[37] Ibid., p. 34.

[38] Ibid., p. 89.

In summary, the four situational variables included in Ancillary Question 4 were hypothesized to be factors possibly contributing to the variances in I & R unit effectiveness. These were included to sort out and account for variance in unit effectiveness as accurately as possible and to test further the IGE/MUS-E model.

Statement of the Problem

The purpose of this study was to determine the relationship of teachers' perceptions of extent of involvement in decision making and representation in the decision process to teachers' perceptions of effectiveness of the I & R unit. The basic terms are defined operationally as follows:

1. Extent of Involvement in Decision Making. The first of the independent variables is defined as the teachers' perceptions of the level to which the IIC participates in identifiably potent decision areas, these levels ranging from "no involvement" to "making the final decision."

2. Representation. The second of the independent variables is defined as the degree to which teachers feel they are represented in the decision process of the IIC through their unit leader who may convey their ideas, opinions, and/or misgivings to the IIC and thereby influence administrative decision making in response to these feelings.

3. Effectiveness. The dependent variable was defined as the joint accomplishment of the I & R units' stated objectives. The list

of performance objectives are those set forth as the responsibility of the I & R unit by the Wisconsin Research and Development Center. It was measured by the I & R Unit Operations Questionnaire.

Hypotheses one through three were designed to explore the relationships between unit teachers' perceptions of decision involvement, representation, and unit effectiveness. They were as follows:

(H_1) There is no relationship between the unit teachers' perceptions of the extent of involvement in decision making by the IIC and the unit teachers' perceptions of the effectiveness of the I & R unit.

(H_2) There is no relationship between the unit teachers' perceptions of representation through their unit leader serving on the IIC and the unit teachers' perceptions of the effectiveness of the I & R unit.

(H_3) There is no relationship between the unit teachers' perceptions of extent of involvement in decision making by the IIC and the unit teachers' perceptions of representation through their unit leader and the unit teachers perceptions of effectiveness of the I&R unit.

Hypotheses four through six explore the relationships between the unit leader's perception of extent of involvement in decision making by the IIC, representation provided, and the unit teachers' perceptions of the effectiveness of the I & R unit. They were stated as follows:

(H_4) There is no relationship between the unit leader's perception of extent of involvement in decision making by the IIC and the unit teachers' perception of the effectiveness of the I & R unit.

(H_5) There is no relationship between the unit leader's perception of representation on behalf of the I & R unit teachers in the IIC and the unit teachers' perceptions of the effectiveness of the I & R unit.

(H_6) There is no relationship between the unit leader's perception of extent of involvement in decision making by the IIC and the unit leader's perception of the representation she (or he) perceives herself (or himself) to provide for the I & R unit by serving on the IIC and the unit teachers' perceptions of the effectiveness of the I & R unit.

Hypothesis seven explores the relationship between unit teachers' perceptions of representation as provided by their leader and unit teachers' perceptions of the extent of involvement in decision making by the IIC.

(H_7) There is no relationship between the unit teachers' perception of representation through their unit leader serving on the IIC and the unit teachers' perceptions of the extent of involvement in decision making by the IIC.

The following ancillary questions compare the perceptions of the unit teachers and those of the unit leader concerning decision involvement, representation, and unit effectiveness:

1. Do unit leaders and unit teachers differ significantly in their perception of extent of involvement in decision making by the IIC?

2. Do unit leaders and unit teachers differ significantly in their perceptions of representation as provided by the unit leader?

3. Do unit leaders and unit teachers differ significantly in their perceptions of I & R unit effectiveness?

4. Do the following situational factors relate systematically to the effectiveness of I & R units?

(a) Class load of Unit

(b) Frequency of Unit Meetings

(c) Released Time for Unit Leader

(d) Degree Status of Unit Leader

Significance of the Study

Participative decision making and representation for workers are concepts which may be studied in the context of administration not only of schools but also of business and industry. These have appeal to democratic societies because of their stated allegiance to the ideals of representation and participation, and they have appeal to Communist societies because of their ideal of power vested in the working class. The organizational hierarchy of the traditional educational institution has given short shrift to these ideals. This study will examine a model implementing participative decision making and teacher representation and assess its relationship to effectiveness. The results have implications for administration of institutions of all kinds in their search for increased effectiveness (production). This does not imply that the relationships which may emerge are generalizable to institutions other than IGE/MUS-E schools, but that the study of participative decision making in other settings might also be fruitful.

In addition, if the relationships between participation in decision making through representation and effectiveness are positive, then the social systems model of Getzels and Guba will have gained some measure of empirical support--since participative decision making is conceptualized in this study as closing the gap between role and need-dispositions, resulting in increased effectiveness of the social system (school) being investigated.

Limitations of the Study

All the measurements, the extent of involvement in decision making, the degree of representation, and the I & R unit effectiveness, depend on the perceptions and evaluations of the participants. The biases and perceptual inaccuracies of the respondents are necessarily incorporated in the data. To some extent, the biases of one respondent may cancel out the biases of another respondent. For example, those who are emotionally committed to their unit leader or the IGE/MUS-E design may be counterbalanced by those who bear animosities to the leader or to the IGE/MUS-E program or to program change of any kind.

As mentioned in the introduction, the model of IGE/MUS-E is one example embodying teacher participation in the administration of a school. The IIC includes only the participation of a unit leader in decision making. Although the unit leader is also a teacher, the leader is often chosen by administration, not by the teachers themselves. The unit leader could be perceived as only another eschelon of authority since he is not selected by the teachers. Teachers participate in decision making indirectly through a fellow teacher who may or may not be representative of their views.

Since the study draws its sample only from IGE/MUS-E schools, the results cannot be generalized to other schools.

Overview of the Study

Chapter I presented a discussion of the components, development, and diffusion of IGE/MUS-E. The literature related to the theory and research on decision making, participation, representation, and effectiveness was discussed. The statement of the problem, the hypotheses, the significance and the limitations of the study were included in this chapter.

Chapter II will cover the description of the design and methodology of the study. Chapter III will present and analyze the data which have been collected and processed. Chapter IV will present a summary of the study, findings, conclusions, and implications for further research and practice.

CHAPTER II

DESIGN AND METHODOLOGY

This chapter describes the methodology of the study and the statistical design for analyzing the data. The chapter deals with (1) development and description of the instruments, (2) population and sample selection, (3) procedures for data collection, and (4) statistical methods of analysis.

Development and Description of the Instruments

Decision Involvement and Representation Index

The Decision Involvement and Representation Index was designed to measure teachers' perceptions of extent of involvement in decision making by their school's IIC. It consisted of twenty-five decision items. Respondents were asked to indicate involvement in decision making by a number rating of zero to four using a five-point Likert-type scale. The content of decision making was indicated by specific decision content items. For example, item one read as follows: "The curricular area to be individualized first, second, etc." Respondents were also asked to indicate for each decision item, again on a five-point scale, their perceptions of the representation provided by their unit leaders. Thus, the instrument requested two ratings on each decision item, one for extent of involvement in decision making; the other, for extent of representation.

It was assumed that the extent of involvement in decision making by the IIC might be considerable, yielding a high score on that variable, while the degree of representation afforded by a unit leader might be little or none. In this case, the individual teacher would be essentially shut out from sharing in the decision process, since, regardless of how effectively the IIC has participated in the decision making, the unrepresented teacher has not had an outlet for the expression of an individual viewpoint or a channel for individual ideas to be relayed to the administrators of the school. In this case, it was hypothesized that the teacher does not combine individual needs-dispositions and normative job expectations into feelings of satisfaction which lead to effectiveness and efficiency of role performance as theorized in the Getzels-Guba Model of Role Expectations (See Figure 1, Chapter I).

How the situations in a unit in an IGE/MUS-E might occur and be reflected in the data, is shown in Table 1. To quantify these situations the Decision Involvement and Representation Index was devised to afford two dimensions to decision sharing, a score for decision involvement, and score for representation. Scores were computed for units from the combined scores of individual teachers comprising the unit, including the unit leader. The unit leaders' scores were analyzed separately as well as combined in the unit score, because it was felt that due to ego involvement their self-perceptions of representation and involvement might be substantially different from that of the teachers.

TABLE 1

DECISION INVOLVEMENT, REPRESENTATION, EFFECTIVENESS

UNIT SCORE ON EXTENT OF INVOLVEMENT IN DECISION MAKING IN THE SCHOOL'S IIC	UNIT SCORE ON EXTENT OF REPRESENTATION AFFORDED BY UNIT LEADER	EFFECTIVENESS OF ROLE PERFORMANCE BY TEACHERS IN A UNIT
High	Low	Low (Teachers viewpoint not communicated)
Low	High	Low (Teachers represented but IIC not involved)
Low	Low	Low (Teachers viewpoint not communicated, IIC not involved
High	High	High (Teacher represented IIC involved

The Decision Involvement and Representation Index was developed from two instruments, one devised by Smith[1] and the other by Wright.[2] Smith's measure, called Decision Involvement, was a fourteen-item instrument using a rating scale of zero to three (a four-point Likert type scale) and served to measure IIC effectiveness. The respondents in Smith's study were asked to rate effectiveness on a decision item using four choices: "made the decision, recommended the decision, provided and/or gathered information regarding the decision, and no involvement."[3] These descriptive terms were quantified with a rating of three for "made the decision" while at the other end of the scale "no involvement" was rated zero. This scale was modified in the present study to include one more term which was inserted between terms one and two. The additional term read "developed possible alternatives." The scale used in this study, then, was a five-point, Likert-type scale with ratings from zero to four, and the five terms were: "No involvement," "Provided information regarding decision," "Developed possible alternatives," "Recommended the decision," "Made the decision." The scores had a possible range of five points, although the rating used by the respondent was from zero to four. The use of zero was to help the respondent conceptualize the "No involvement." The additional term representing another step in the decision process was based on decision involvement analysis as described by Lipham.[4] It allowed for more accuracy in describing the process and provided more variance in scoring.

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[1] Kenneth B. Smith, "An Analysis of the Relationship Between Effectiveness of the Multiunit Elementary Schools Instructional Improvement Committee and Interpersonal and Leader Behaviors," Technical Report No. 230, (Madison, Wisconsin: Wisconsin R & D Center for Cognitive Learning, 1972).

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[2] Kenneth W. Wright, "Development of an Instrument to Measure Real and Ideal Decision Structure and Real and Ideal Decision Involvement in Individually Guided Education/Multiunit Elementary Schools," Dissertation Proposal, University of Wisconsin, Madison, Wisconsin, 1974.

[3] Smith, pp. 114-115.

Decision content items for the instrument used in this study were taken from Smith's instrument and from the instrument designed later by Wright to measure real and ideal decision making in multiunit schools. Smith used the IGE/MUS-E model as a basis for his items, and Wright enlarged the list of decision items to serve the purpose of his study and also to update the items from actual decision making experiences of IGE/MUS-E's. The items in this study's Decision Involvement and Representation Index were selected with the logic that the instrument should measure IIC's involvement in the kinds of decisions not falling into the category of intraunit but rather schoolwide. These might be further categorized as those decision areas formerly given to the principal with as much teacher consultation as that administrator wished to seek. In this sense, the teachers were given new involvement in decision.

In Wright's instrument, the decision items were based on IGE/MUS-E literature, as in Smith's instrument. Some items were added based on data gathered through short response questionnaires distributed at IGE/MUS-E conferences and interview data collected in a stratified sample of IGE/MUS-E's. The decision content items selected by Wright were further rated for potency. Potency was defined by Wright "as the degree of impact decisions in the set have on the educational process."[5] These ratings were used to select final items for Wright's instrument.

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[4] James M. Lipham and James S. Hoeh, THE PRINCIPALSHIP: FOUNDATIONS AND FUNCTIONS, (New York: Harper & Row, 1974), pp. 165-166.

The Index devised for this study utilized decision content items from Smith's and Wright's instruments. The criteria for selection was based on the purpose of the present study. Some items were reworded. There were some items omitted which were thought to be duplicates or not appropriate for this study. The items were also submitted to a group of experts at the Wisconsin R & D Center for approval and/or suggestions as to the wording and appropriateness.

The Index was further expanded to allow respondents to rate their perceptions on the extent of representation as provided by their unit leader for the I & R Unit. The terms used for this rating were: "None", "Little", "Moderate", "Considerable", and "Full." The respondent used zero to four, yielding scores with a possible range of one through five. Provision was made on the answer sheet for the respondent to rate each item (a specific decision content area) on extent of involvement and representation.

The twenty-five items on the Decision Involvement and Representation Index were put into three scales. These scales were devised as a result of a factor analysis run on a pilot study done by Wright.[6]

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[5] Wright, op. cit., pp. 9-10.

[6] Kenneth J. Wright, Unpublished Factor Analysis on Present Decision Involvement-Pilot, Number 3, Real, 4/23/74.

The computer program used for the factor analysis was PROGRAM BIGFACT.[7] The number of observations was 104, and there were 49 items in the instrument, Decision Involvement #3 Real (one section of the total instrument to measure real and ideal decision involvement in IGE/MUS-E schools). As the factor analysis resolved itself down to a reordered oblique projection matrix with three factors, the fourth factor being discarded because of low eigenvalues, the items were listed under each factor and the decision content of the items were scrutinized for common concepts relationships (See Table I for the listing of decision items under each factor).

As a result of this thinking-through process, the following three concept categories were identified for the scales, and were given names as follows: (1) Power-Money-Sanctions, (2) Non-powerful Curriculum, and (3) Powerful Curriculum. Category I contains decision content items usually restricted to administration since these decisions involve the expenditure of money, distribution of status, and the imposition of sanctions through evaluation of job performance. Category II contains decision content items more traditionally relinquished to teachers, such as ordinary pupil discipline, groupings for instruction, and instructional activities. Category III contains decision content items concerning curriculum, but significant and visable, such as the topics for inservice programs, the coordination of curriculum across units within a school, and the specification of curriculum objectives for a school.

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[7] Dennis W. Spuck and Donald N. McIsaac, PROGRAM BIGFACT, (Madison, Wisconsin: Wisconsin Information Systems for Education, 1971).

Category I might be decisions which administrators would be loath to relinquish since these decisions are controlling. Also, it was proposed that Category II contained insignificant intraunit decisions not likely to interest administrators--decisions which traditionally fell to teachers. Category III involved powerful curriculum decisions, such as the purchase of materials or hiring of consultants. It was surmised that administrators might also cling to these decisions. This hypothesis was explored by examination of the statistics contained in the Descriptive Statistics (DISTX) results of the pilot study of Wright's instrument.[8] The DISTX program was run on Real/Ideal Decision Involvement. The discrepancies between means on real and ideal decision involvement scores from scale one and scale three items were roughly twice the size of discrepancies between means on real and ideal scores from scale two items. It did appear that administrators were reluctant to share decisions from Scale I, Power-Money-Sanctions, and Scale III, Powerful Curriculum, and that, ideally teachers sought more voice in these decisions. (See Table 2).

In this way, the scales were conceptualized and they were modified to accommodate a twenty-five item instrument and some changes in wording. The scales used in the analysis of the Decision Involvement

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[8] Kenneth J. Wright, Unpublished Statistical Analysis of Real/ Ideal Decision Involvement, 4/28/74.

TABLE 2

COMPUTER ANALYSIS OF FACTORS WHICH CLUSTER REORDERED OBLIQUE PROJECTION MATRIX[9]

FACTOR I POWER (MONEY-SANCTIONS-REWARDS)

Disrepancies between Means Real and Ideal	Item Content	Eigenvalue First Item Adjusted to 1.00
1.61	The budget for the school	1.00
1.54	The amount and nature of supervision of teaching	.978
1.54	The selection of new teachers	.967
1.93	The procedures to be utilized in evaluating a teacher's performance	.883
1.11	The approval of instructional materials to be purchased	.860
1.68	The nature and extent of consultant help from outside the school	.728
1.03	The procedures to be utilized in evaluating instructional materials within a school	.716
1.11	The procedures to be utilized in evaluating a principal's performance	.656
2.17	The amount of money designated for implementation of new programs within the school	.649
2.01	The number of new teachers to be hired for the school	.525
1.70	The amount of planning time provided unit leaders for unit related activities	.501

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[9] Wright, Values cited in Table II are taken from both the factor analysis and the statistical analysis cited in footnotes 6 and 8.

TABLE 2 (continued)

FACTOR II NON-POWERFUL CURRICULUM

Discrepancies between Means Real and Ideal	Item Content	Eigenvalue First Item Adjusted to 1.00
.43	The nature and duration of specific instructional activities	1.00
.59	The procedures to be utilized in pre-assessing an individual student's level of achievement	.88
.73	The methods used to modify student conduct	.83
.39	The groupings to be utilized for instruction	.82
.91	The subject matter area to individualized first, second, etc.	.65
.57	The design and content of the curriculum within a unit	.75

There were 17 items. Not all are listed because they were not utilized for the present study. The next two were "The type of stimulation and guidance provided each child," and "The specific instructional objectives each child is to attain." These should give the nature of the category.

TABLE 2 (continued)

FACTOR III POWERFUL CURRICULUM

Discrepancies Between Means Real and Ideal	Item Content	Eigenvalues First Item Adjusted to 1.00
1.52	The topics for inservice programs	1.00
1.64	The coordination of curriculum across units within a school	.77
2.21	The criteria to be utilized in evaluating preservice and inservice programs	.72
1.73	The duties and responsibilities of the principal	.70
1.47	The extent of involvement of parent advisory groups in the programs of the school	.70
1.22	The specification of curriculum objectives for a school	.64
1.92	The selection of unit leaders	.63

and Representation Index were the result of the above process and items were randomly presented on the questionnaire and not displayed to the respondent. The scales reflect the thinking and conceptualization of this researcher and may be different from any conclusions that emerge from the study by Wright who merely shared the data from his pilot. The decision items for the Decision Involvement and Representation Index were placed in Scales I, II, and III as shown in Table 3.

TABLE 3

SCALES FOR DECISION INVOLVEMENT AND REPRESENTATION INDEX

Factor I POWER (MONEY-SANCTIONS-REWARDS)

1. The items to be included in the budget
2. The procedures for evaluating teachers
3. The selection of new teachers for the school
4. The amount of planning time provided unit leaders for unit related activities
5. The number of new teachers to be hired for each unit
6. The assignment of teachers, student teachers, and aides
7. The criteria to be utilized in evaluating the effectiveness of IGE within the school

Factor II NON-POWERFUL CURRICULUM

1. The guidelines governing pupil conduct
2. The procedures for keeping student cumulative records
3. The duties of instructional or clerical aides
4. The integration of art, music, and physical education into the IGE program

TABLE 3 (continued)

5. The procedures for reporting student progress to parents.

6. The new programs to be implemented within the school (the original wording--"the amount of money designated for implementation of new programs within the school." Didn't fit with factor I according to correlation with scale on pilot study. Removal of money may have changed this item in concept. It was placed under Factor II where it seemed to fit conceptually and in its correlation to scale scores.)

7. The assignment of students to units.

8. The priority for the use of unassigned equipment, unscheduled rooms, and multipurpose areas.

9. The curricular area to be individualized first, second, etc.

10. The criteria and procedures for evaluating the effectiveness of IGE within the school

Factor III POWERFUL CURRICULUM

1. The inservice activities for staff development.

2. The curriculum objectives for the total school

3. The outside consultants to use

4. The selection of achievement and ability tests to be used

5. The orientation activities for the new staff members in the school

6. The methods for interpreting IGE to parents and taxpayers

7. The use of community volunteers in instructional and other school activities

8. The selection of achievement and ability tests to be used

The Decision Involvement and Representation Index was piloted to assess its reliability. For the pilot study, twenty units were identified by a randomization process through the use of Program IRANDX.[10] The units were chosen from the same population as that utilized for the main study. The IGE/MUS-E's containing these units were contacted by telephone to check the criteria set up for defining the population and to explain the purpose of the study and request cooperation from the school's principal and the specified unit in collection of data. Fifteen schools were sent materials as a result of the telephone survey. Eleven schools returned the completed instruments. These returns netted a total of 11 unit responses, including 11 sets of teachers questionnaires, for use in the pilot. The reliability of the Index was determined by calculation of an alpha coefficient to indicate its internal consistency. Program TSTAT,[11] a computer program written by the Wisconsin Information Systems for Education, was used to calculate the level of internal consistency for the total instrument and for the two categories, decision involvement and representation. The results of the reliability assessment for the pilot study and the main study are presented in Table 4.

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[10] Dennis W. Spuck and Donald N. McIsaac, Program IRANDX, (Madison, Wisconsin: University of Wisconsin, Wisconsin Information Systems for Education, 1971).

[11] Dennis W. Spuck, Program TSTAT, (Madison, Wisconsin: University of Wisconsin, Wisconsin Information Systems for Education, 1971).

TABLE 4

RELIABILITY LEVELS FOR THE DECISION INVOLVEMENT AND REPRESENTATION INDEX

Categories	Pilot Study	Main Study
Decision Involvement		
Scale 1, 7 Items	.7281	.6933
Scale 2, 10 Items	.7735	.7904
Scale 3, 8 Items	.7077	.7451
Total Alpha on Decision Involvement	.8857	.8823
Representation		
Scale 1, 7 Items	.7170	.7049
Scale 2, 10 Items	.8405	.8484
Scale 3, 8 Items	.8161	.7993
Total Alpha on Representation	.9202	.9129

The reliability coefficient is based on the average correlation among items within a test. It is also based on the number of items. It should be applied to new instruments because it sets an upper limit to other estimates of reliability. Nunnally, an expert in psychometrics, wrote: "Coefficient alpha provides a good estimate of reliability in most situations, since the major source of measurement error is because of the sampling of content."[12] In addition,

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[12] Jum C. Nunnally, PSYCHOMETRIC THEORY, (New York: McGraw-Hill, 1967), p. 211.

Nunnally indicated reliability as shown by the alpha coefficient accounts for sources of error arising from situational factors accompanying the items.

The level of reliability acceptable to the researcher was indicated by Nunnally to range from .50 to .90. In early stages of research on hypothesized measures of a construct, reliabilities of .60 or .50 are acceptable. If the research looks promising, the measures should be improved to increase reliability. Nunnally wrote, "For basic research...increasing reliabilities beyond .80 is often wasteful."[13] The concern in these cases is with the size of correlations and differences in means, and a reliability of around .80 is adequate for these purposes.

The content validity is based upon the IGE/MUS-E model (items from Smith)[14] and further refinement and validation of decision content areas by questionnaires and interview data collected in the field by Wright.[15] The final selection of items was then reviewed by a group of experts at the Wisconsin R and D Center at the University of Wisconsin.

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[13] Ibid., p. 226.

[14] Smith, op. cit.

[15] Wright, op. cit.

I and R Unit Operations Questionnaire

The I & R Unit Operations Survey was developed by Evers and Gramenz.[16] The fifty items in this measure are based on a list of performance objectives identified as the tasks of the I & R unit as developed by the Wisconsin R and D Center for the implementation of an IGE/MUS-E. The response consists of a five-point Likert scale ranging from "very effective" to "very ineffective". This instrument was piloted and used by Evers[17] in her study. The internal reliability of each of the four sections were as follows: Instructional Program .9329, Staff Development .8209, Organizational Operations .9283, School Community .7885, Total Instrument .9589. The content validity checks with the IGE/MUS-E model, and the construct validity was determined by factor analysis.

Population and Sample Selection

A list of IGE/MUS-E's was compiled by the R and D Center for the use of researchers who may wish to draw a sample of established multiunit schools. The criteria for placement on this list were as follows: (1) the entire school is organized into the Multiunit pattern; (2) the Instructional Programming Model is being applied to at least one curricular area; (3) the school has an active Instructional Improvement Committee (IIC) which meets at least once a week; (4) the school has multiage grouping in each of the I & R units; (5) the school implemented the IGE/MUS-E mode no earlier than the fall of 1971 and no later than the fall of 1972. This specific time range allowed for only schools whose implementation was accomplished using a common set of inservice materials under the aegis of the Wisconsin R and D Center.

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[16] Nancy A. Evers, "An Analysis of the Relationship Between the Effectiveness of the Multiunit Elementary School's Instructional and Research Unit and Interpersonal Behaviors," Dissertation in Process (Madison, Wisconsin: University of Wisconsin, 1974).

[17] Ibid.

A program was written for the computer to gain a list of 1608 units from the schools which met the criteria for established IGE/MUS-E's. Then a random sample of sixty-seven units from the schools in the population described was drawn from this list through the use of Program IRANDX.[18] This number was calculated to yield fifty I & R units for the study. The schools of selected I & R units were contacted by telephone to request their participation in the study. Fifty-one units agreed to arrange for teachers to complete the measurement instruments. The number of unit responses returned and properly filled out was 37. The responses from the pilot study were combined with the responses from the main study to make a total of 48 unit responses.

Procedures for Data Collection

The procedures for data collection was described in detail in a letter to each principal. This letter delineating the procedures was mailed at the time the instruments and self-addressed containers for return mailing were sent to the schools of selected I & R units. Principals were asked to (1) assemble the unit teachers for a meeting to fill out the questionnaires, (2) distribute the set of two questionnaires and a background information sheet to each unit teacher including the unit leader, (3) instruct each unit teacher to fill out the background information and to answer the questionnaires frankly and carefully according to their perceptions alone, (4) place the materials into envelopes provided for each participant and seal them, (5) ask the unit leader to be certain all teachers have returned their envelopes and to return the set of envelopes to the principal, (6) place the set of envelopes into a large self-addressed envelope which was to be returned to the R & D Center in Madison, Wisconsin.

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[18] Spuck and McIsaac, Program IRANDX, op. cit.

Principals were cautioned to assure participants of the study that the responses were confidential and would not be revealed to any persons in the local system and would be coded by number in the study. Principals were asked to say that the results of the study would be communicated to those who had participated indicating the pattern of responses and the interrelationships, if any were discovered. Names of schools and participants would not be published and would remain confidential as part of the raw data for the study. The importance of field cooperation in research was emphasized and appreciation for the time devoted to completion of forms was expressed to the principal to be relayed to those responding.

Statistical Methods of Analysis

To test hypotheses one, two, four, five, and six Pearson product moment correlation coefficients were calculated. These hypotheses concerned the relationship between the dependent variable, effectiveness of the I & R unit, and each of the independent variables acting alone, as perceived by the teachers and as perceived by the unit leader, whose response it was hypothesized might be systematically different. When teachers were being considered, their scores were combined into a composite score made up of individual scores of teachers in a unit. The individuals who were asked to respond and how the scores were composited is indicated in Table 5.

To test hypotheses three and seven, multiple regression techniques were utilized to determine the covariance in I & R unit effectiveness as perceived by teachers and involvement in decision making and representation when associated together. In hypothesis three, these independent variables involved all the unit teachers, and, in hypothesis six, these variables involved the unit leader. Effectiveness of the I & R unit is always a composite unit score made up of all the teachers in the unit including the unit leader.

The factors dealt with in ancillary question 4 were considered to be those which might influence effectiveness scores. These were class load of the I & R unit, frequency of unit meetings, released time for unit leaders, and educational degree held by the unit leader. These factors were mentioned in the ancillary questions so that account could be made for any variance in the dependent variable which might

TABLE 5

INSTRUMENTATION
WHO WILL RESPOND?
HOW WILL SCORES BE COMPOSITED?

UNIT X	DECISION INVOLVEMENT	REPRESENTATION	UNIT EFFECTIVENESS	SET OF SCORES
Teacher-1	x	x	x	DI R Eff
Teacher-2	x	x	x	DI R Eff
Teacher-3	x	x	x	DI R Eff
Teacher-4	x	x	x	DI R Eff
Unit Leader	x	x	x	DI R Eff
			UNIT X TOTALS	DI R Eff 5 5 5

Unit leader will be included in all composite unit scores along with the other teachers.

All effectiveness scores will be composited scores which include the scores of the unit leader and all the teachers in a unit.

In some correlations the unit leader's score on either decision involvement or representation is utilized with the unit composite score on effectiveness, which includes the unit leader's and the teachers' scores on effectiveness.

Scale scores on all three measures are composited in the same way as described for total scores on each instrument.

be due to these factors, and to make certain they did not mask or becloud the relationships, which were central to the main study. These factors were assessed by multiple regression analysis along with extent of involvement in decision making and representation, the two independent variables in the main study.

A stepwise regression procedure was used to determine the relative contribution each of the independent variables made in explaining the dependent variable, effectiveness of the I & R unit. Six variables were entered in the regression procedure: the two independent variables of concern to the main study--extent of involvement in decision making and representation and the factors mentioned in the ancillary questions--class load, frequency of team meetings, released time for unit leader, and educational degree held by unit leader. Two appropriate computing programs were utilized to perform this analysis, and also the analyses in which a Pearson product moment correlation coefficient was desired. A .05 level of confidence was used to determine the statistical significance of the correlations. The strength of the product moment correlations was ascertained using the index and procedures available in this computer program. T tests were employed to examine the perceptual differences between unit leaders and teachers.

Significance of the Study

Participative decision making is a concept which may be studied in the context of administration not only of schools but also of business and industry. It has appealed to democratic societies because of their stated allegiance to the concept of representation, and it has appealed to Communist societies because of their ideal of power vested in the working class. The organizational hierarchy of the traditional educational institution has given short shrift to this ideal. This study will examine a model implementing participative decision making and teacher representation and assess its relationship to effectiveness. The results have implications for administration of institutions of all kinds in their search for increased effectiveness (production). This does not imply that the relationships which may emerge are generalizable to institutions other than IGE/MUS-E schools, but that the study of participative decision making in other settings might also be fruitful.

In addition, if the relationships between effectiveness and participation through representation in decision making are positive, then the social systems model of Getzels and Guba will have gained some measure of empirical support--since participative decision making is conceptualized in this study as closing the gap between role and need-dispositions, resulting in increased effectiveness of the social system (school) being investigated.

Limitations of the Study

All the measurements, extent of involvement in decision making, degree of representation, and I & R unit effectiveness depend on the perceptions and evaluation of the participants. The biases and perceptual inaccuracies of respondents are necessarily incorporated in the data. To some extent these biases may cancel each other. The responses of those who are personally committed to a unit leader or to the IGE/MUS-E design may be counterbalanced by the responses of those who bear animosities toward the unit leader or toward the IGE/MUS-E program or program change of any kind.

As mentioned in the introduction, the model of IGE/MUS-E is one example embodying teacher participation in the administration of a school. The IIC includes only the participation of a unit leader in decision making. Although the unit leader is also a teacher, the leader is often chosen by administration, not by the teachers themselves. The unitleader could be perceived as only another echelon of authority since he is not selected by the teachers. Teachers are participating in decision making vicariously or indirectly in this model of organization.

Since the study draws its sample only from IGE/MUS-E schools, the results cannot, therefore, be generalized to other schools.

Overview of the Study

Chapter I presented a discussion of the components, development, and diffusion of IGE-MUS-E. The literature related to the theory and research on decision making, participation, representation, and effectiveness was discussed. The statement of the problem, the hypotheses, the significance and the limitations of the study also were included in this study.

Chapter II covered the description of the design and method used in the study. Chapter III will analyze the data which has been collected and processed. Chapter IV will present a summary of the study, findings, conclusions, and implications for further research and study.

CHAPTER III

ANALYSIS OF THE DATA

This chapter is divided into four sections. The first section is an introduction which includes a flow chart of the total data processing procedure and a discussion of the relationship of that process to testing the hypotheses and the ancillary questions. The second section consists of a discussion of the test statistics and the factor analysis of the Decision Involvement and Representation Index, the instrument used to measure the two independent variables in the major hypotheses. The third section consists of a discussion of the results of the correlation and regression analyses, which test the major hypotheses, and a presentation of the findings on correlations between situational factors and the dependent variable, unit effectiveness, as discussed in the ancillary questions. The fourth section includes a discussion of the comparison of means caled for in the ancillary questions.

The Data Processing Procedure

The raw data consisted of three sets of responses from 188 individuals, the total combined number of the pilot and the main study. The first set of responses measured decision involvement; the second, representation; and the third, I and R unit effectiveness. The first two sets constituted the raw data to supply the independent variable scores and the last set gave the raw data for the dependent variable scores. In addition, there were six variables labeled "situational" for which the unit leader's background sheet supplied the information. These were (1) number of staff, (2) number of I and R unit meetings, (3) number of pupils in the unit, (4) released time for the unit leader, (5) degree status of unit leader, and (6) unit load or number of pupils divided by number of teachers including the unit leader.

These individual scores were composited into unit scores, which consisted of a unit leader score, a mean teacher score, and a mean combined unit leader and teacher score. In addition, there were the six situational measures, staff, meetings per week, number of pupils, released time for unit leader, degree status of unit leader, and unit load. Since the decision involvement and representation measures each had three scale scores and a total (8 scores), and since the unit effectiveness measure had four scales and a total (5 scores), and since each of these scores were recorded for the unit leader, teachers, and unit leader and teachers combined, the result was 3 times 13 (or 39) plus 6 situational variables, making a matrix of 45 variable scores per unit. (See Table 6 for the listing of the 45 variables). The reader should bear in mind there were basically still three main variables, each measured in different aspects, scales, and totals for different individuals, teachers and unit leaders.

TABLE 6

VARIABLES IN COMPOSITED MATRIX

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1. Number of Staff Teachers in I and R Unit
2. Number of Meetings Held by I and R Unit per Week
3. Number of Pupils in Unit
4. Released Time for Unit Leader
5. Degree Status of Unit Leader
6. Unit Load or Number of Pupils per Staff Teacher
7. Scale 1-Decision Involvement-Unit Leader
8. Scale 1-Decision Involvement-Teacher Mean
9. Scale 1-Decision Involvement-Unit Leader and Teacher Mean
10. Scale 2-Decision Involvement-Unit Leader
11. Scale 2-Decision Involvement-Teacher Mean
12. Scale 2-Decision Involvement-Unit Leader and Teacher Mean
13. Scale 3-Decision Involvement-Unit Leader
14. Scale 3-Decision Involvement-Teacher Mean
15. Scale 3-Decision Involvement-Unit Leader and Teacher Mean
16. Total Decision Involvement-Unit Leader
17. Total Decision Involvement-Teacher Mean
18. Total Decision Involvement-Unit Leader and Teacher Mean
19. Scale 1-Representation-Unit Leader
20. Scale 1-Representation-Teacher
21. Scale 1-Representation-Unit Leader and Teacher Mean

TABLE 6 (continued)

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22. Scale 2-Representation-Unit Leader
23. Scale 2-Representation-Teacher Mean
24. Scale 2-Representation-Unit Leader and Teacher Mean
25. Scale 3-Representation-Unit Leader
26. Scale 3-Representation-Teacher Mean
27. Scale 3-Representation-Unit Leader and Teacher Mean
28. Total-Representation-Unit Leader
29. Total-Representation-Teacher Mean
30. Total-Representation-Unit Leader and Teacher Mean
31. Scale 1-Effectiveness-Unit Leader
32. Scale 1-Effectiveness-Teacher Mean
33. Scale 1-Effectiveness-Unit Leader and Teacher Mean
34. Scale 2-Effectiveness-Unit Leader
35. Scale 2-Effectiveness-Teacher Mean
36. Scale 2-Effectiveness-Unit Leader and Teacher Mean
37. Scale 3-Effectiveness-Unit Leader
38. Scale 3-Effectiveness-Teacher Mean
39. Scale 3-Effectiveness-Unit Leader and Teacher Mean
40. Scale 4-Effectiveness-Unit Leader
41. Scale 4-Effectiveness-Teacher Mean
42. Scale 4-Effectiveness-Unit Leader and Teacher Mean
43. Total-Effectiveness-Unit Leader
44. Total-Effectiveness-Teacher
45. Total-Effectiveness-Unit Leader and Teacher Mean

These 45 variables were analyzed by DSTAT2,[1] REGAN2,[2] and STEPREG1[3] to test the major hypotheses. The correlations were further utilized in a computer program written to yield t-tests for comparison of correlated means, as required to answer the ancillary questions. The matrix was also utilized to produce a table indicating the distribution of high and low unit scores on the three variables (decision involvement, representation, and unit effectiveness) to show in simplified visual form the pattern of high and low responses on the three main variables. This table was produced by CROSTAB2.[4]

Figure 5 is a flow chart giving an overview of the total data processing procedure. One should note the deck of raw scores from individuals and its expansion into a deck with scale totals and instrument totals, and the compositing of that into a deck of punched cards carrying the matrix containing the 45 variables. Eventually, a fourth set of cards, a cross-products matrix, was produced from the correlation analysis (DSTAT2) and this deck was utilized to run the regression analyses.

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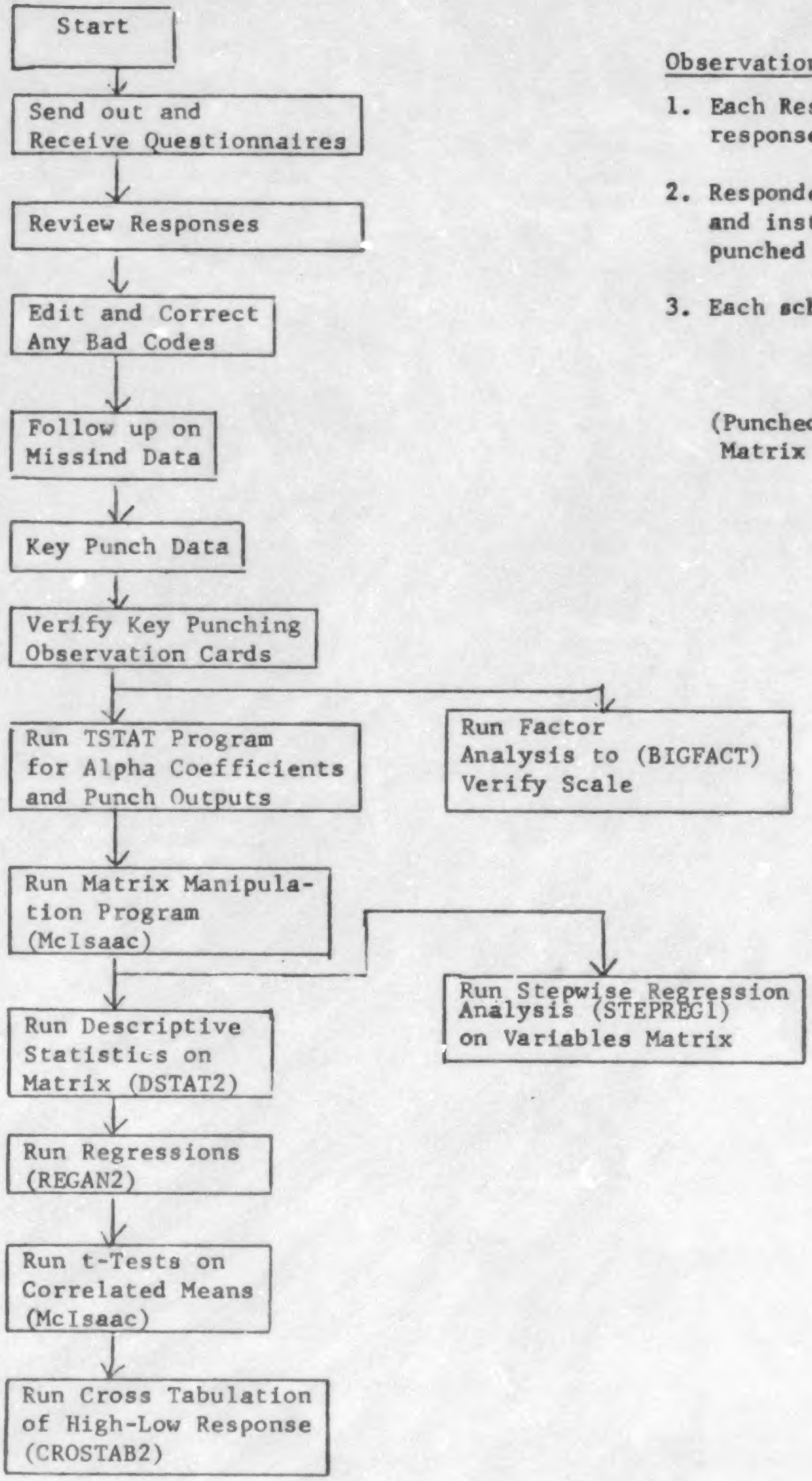
[1] W. H. Wetterstrand, Jeremy M. Learn, and Peter J. Wolfe, DSTAT2 DESCRIPTIVE STATISTICS AND CORRELATION, (Madison, Wisconsin: Academic Computing Center), 1973.

[2] James R. Allen and Jeremy M. Learn, REGAN2: MULTIPLE LINEAR REGRESSION ANALYSIS, (Madison, Wisconsin: Academic Computing Center), 1971.

[3] James R. Allen and Jeremy M. Learn, STEPREG1: STEPWISE LINEAR REGRESSION ANALYSIS, (Madison, Wisconsin: Academic Computing Center), 1973.

[4] Peter J. Wolfe, Jim R. Allen, and Ralph St. C. John, CROSSTAB2: DATA TABULATION, (Madison, Wisconsin: Academic Computing Center), 1975.


Start
Send out and Receive Questionnaires
Review Responses
Edit and Correct Any Bad Codes
Follow up on Missind Data
Key Punch Data
Verify Key Punching Observation Cards
Run TSTAT Program for Alpha Coefficients and Punch Outputs
Run Factor Analysis to (BIGFACT) Verify Scale
Run Matrix Manipulation Program (McIsaac)
Run Stepwise Regression Analysis (STEPREG1) on Variables Matrix
Run Descriptive Statistics on Matrix (DSTAT2)
Run Regressions (REGAN2)
Run t-Tests on Correlated Means (McIsaac)
Run Cross Tabulation of High-Low Response (CROSTAB2)

Observation Cards

1. Each Respondent's individual responses on Questionnaire

2. Respondent scale totals and instrument totals punched from TSTAT

3. Each school unit: Unit Leader
Teachers
Unit Leader and Teacher
(Punched from McIsaac's Matrix Manipulation Program)

Figure 5. Flow Chart for Data Handling for Participative Decision Making

Handling Missing Data

If a single item response was missing from any of the three measures, it was left blank and dealt with later in each computer analysis. In the TSTAT program, a blank became a three on the measure for effectiveness (I and R Unit Operations Questionnaire), and a one on the Decision Involvement and Representation Index. If Representation was missing in toto, Decision Involvement was used to generate the scales and totals for an individual, since these two measures proved to be closely correlated in a regular fashion, as will be seen later in the discussion of the test statistics and in the correlation analyses of these two measures. There were only three instances in which this procedure was utilized in the main study data, and only one in the pilot data.

If there was no unit leader, but a rotation system whereby each teacher served a term on the IIC, this was handled by creating a composite unit leader from the average of the teachers so that scores could be supplied for the unit leader cell of the matrix and a whole unit's data would not be lost.

If both Decision Involvement and Representation sections or a substantial portion of the unit effectiveness measure were missing, the whole set of measures was omitted. If this happened with a unit leader, the unit was dropped from the study. If a teacher's set of measures was dropped, the unit was retained in the study and means were figured reflecting that loss. There was an attempt to retain only responses complete enough to form a pattern. All data were carefully checked.

Population and Sample

There were 67 units in the random sample drawn from a population of 1,608 units in schools which met the IGE criteria. As a result of telephone contact, 50 units agreed to participate. Thirty-seven units returned usable data. Thirteen units (of the 50 units) were lost for the following reasons: (1) 3 units returned incomplete data; (2) 3 units returned data too late to be processed; (3) 5 units stated their schools were not operating as IGE/MUS-Es; (4) 2 units did not return any materials.

The data from the pilot (11 units from a random sample of 20) and the main study were combined to yield a more substantial number for the analyses. The pilot and main study were both conducted within the same school semester so the time frame was considered to be almost the same. The instruments were identical for both studies. The total sample of 87 (pilot and main study) resulted in 48 usable response sets. Thus a percentage yield of 55 was realized.

An analysis was made of the location of responding and non-responding schools (Tables 7 and 8). Examining state locations, the numbers returning data in each state and the numbers not returning did not seem to differ greatly. Those units which were not included in the study were scattered over the range of nine states and were located in urban and non-urban settings. Table 9 shows a contingency table with the combined incidence of pilot and main study of urban and non-urban setting for units returning data and not returning data. The chi-square statistic showed the distribution of the units with respect

TABLE 7

LIST OF STATES IN WHICH PARTICIPATING SCHOOLS WERE LOCATED

(PILOT STUDY)

	Data Returned	Data Not Used or Not Returned
1. Colorado	1	0
2. Connecticut	0	1
3. Illinois	2	2
4. Indiana	1	0
5. Massachusetts	1	0
6. Minnesota	1	1
7. New Jersey	0	2
8. Ohio	2	0
9. South Carolina	1	1
10. Wisconsin	2	2
	11	9
Small Cities or Vilages	11	6
Large Cities or Urban Areas	0	3

TABLE 8

LIST OF STATES IN WHICH PARTICIPATING SCHOOLS WERE LOCATED

(MAIN STUDY)

	Data Returned	Data Not Used or Not Returned
1. California	2	3
2. Colorado	4	0
3. Connecticut	3	2
4. Illinois	2	3
5. Indiana	3	1
6. Massachusetts	1	0
7. Minnesota	1	3
8. Nebraska	2	0
9. New Jersey	4	2
10. Ohio	5	5
11. South Carolina	3	2
12. Wisconsin	8	8
	38	29

Small Cities or Villages	Data Returned	32	Data Not Returned or Not Used	14
Large Cities or Urban Areas	Data Returned	11	Data Not Returned or Not Used	10

TABLE 9

DISTRIBUTION OF RESPONDING AND NON-RESPONDING UNITS BY URBAN AND NON-URBAN SETTINGS

	Data Returned	Data Not Returned (All Units not included)	
Small Cities or Villages	43	20	63
Large Cities or Urban Areas	11	13	24
	54	33	87

Chi-square = 2.82* (1 degree of freedom)

*Not significant at the .05 level of confidence to urban and non-urban settings to be not significantly related to the column classification of returning or not returning.

In an attempt to ascertain if the returned data represented a restricted sample of schools in respect to size, the ranges in number of total staff teachers and total pupils in the units included in the study were observed. Total number of pupils in units ranged from 57 to 203. Total number of staff teachers ranged from 2 to 7. One would surmise from these ranges that large and small schools were represented in the data utilized for the study.

As a result of the above analysis of units, included and excluded, the 48 units which furnished data for the final study were assumed to be representative random sample of the population from which they were drawn.

Preliminary Analysis of Instrument to Measure the Independent Variables

Test Statistics on Decision Involvement and Representation Index

The Decision Involvement and Representation Index was devised and used for the first time in this study, while the I and R Unit Operations Questionnaire was utilized and carefully analyzed by Evers in her study. For this reason, this study closely scrutinizes the former two measures and takes only a brief look at the latter.

All three measures were analyzed by Program TSTAT.[5] This computer program provided output as follows: means, standard deviations, alpha-coefficients of internal consistency for each scale and for the total instrument, item correlations with scale and total scores, and choice distributions for each item. From this program, the second punch card deck was generated.

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[5] Donald J. Veldman, PROGRAM TSTAT, written for Univac 1108 by Dennis W. Spuck, based upon FORTRAN PROGRAMMING FOR THE BEHAVIORAL SCIENCES, (New York: Holdt, Rinehart and Winston, 1967), pp. 170-181.

Alpha-Coefficients of Internal Consistency

Alphas were produced for the combined pilot and main study data (See Table 10 for the results). These showed little change from the separate alphas quoted in Chapter II. They were deemed adequate for the purposes of this study.

Distribution of Item Responses

A portion of the distribution of item choices for Decision Involvement is shown in Table 11 to demonstrate the different modalities in the response patterns. Item one was bimodal; item two was skewed positively; item three was skewed slightly negatively; item twenty-four was platykurtic or flattened out. As Glass and Stanley noted, "The degree of symmetry of a frequency distribution is one of its more important properties. Exactly symmetrical frequency polygons and histograms almost never occur with real data."[6] Generally, the distributions of items from Decision Involvement revealed more items that were positively skewed than those that were negatively skewed. This can be stated also as follows: there were more distributions with

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[6] Gene V. Glass and Julian C. Stanley, STATISTICAL METHODS IN EDUCATION AND PSYCHOLOGY, (Englewood Cliffs, New Jersey: Prentice-Hall, 1970), p. 88.

TABLE 10

ALPHA-COEFFICIENTS OF INTERNAL CONSISTENCY FOR THE THREE MEASURES OF MAIN VARIABLES

	Scale 1	Scale 2	Scale 3	Scale 4	Total
Decision Involvement	.6801	.7849	.7472	-	.8794
Representation	.6852	.8139	.7749	-	.8954
I and R Operations Questionnaire (Effectiveness Measure)	.9158	.8416	.8660	.6950	.9412

TABLE 11

ITEM CHOICE DISTRIBUTIONS AS PERCENTAGES FOR DECISION INVOLVEMENT

		Response Levels				
Item	Zero	1	2	3	4	5
1	0	14	25	14	22	25
2	0	64	20	2	10	4
3	0	10	23	18	31	18
4	0	66	14	3	12	4
22	1	17	22	12	25	23
23	1	13	9	23	23	31
24	1	16	15	24	22	22
25	1	32	15	19	18	15

a large percentage of responses at the one level of decision involvement than at the four or five level. One level is "No involvement," four level is "Recommended the Decision," and five level is "Made the Decision."

Table 12 shows a portion of the choice distributions for Representation. The mixture of distribution patterns for item choices revealed itself here as for Decision Involvement, except that items three and twenty-three stood out as more markedly negative in skew with a small percentage of responses falling at the level of "no representation." Items three and twenty-three were scale two items (less powerful curriculum), one item concerned new programs to be implemented and the other concerned pupil discipline. These are certainly two items closely tied to teachers' daily work experiences. These items, three and twenty-three, had percentages of eight and seven on the Representation section compared to percentages of ten and thirteen on the Decision Involvement section, showing higher ratings representation than decision involvement on these items. This trend of higher scores on representation than on decision involvement was borne out by examination of the print of the matrix of scale and total scores for each of the three main variables. Table 13 shows a portion of the data, giving total scores for Decision Involvement and Representation.

Mean Response on Decision Involvement and Representation

It can be seen by examining Table 13 that Representation scores were uniformly higher than Decision Involvement. The average difference

TABLE 12

ITEM CHOICE DISTRIBUTIONS AS PERCENTAGES REPRESENTATION

		Response Levels				
Item	Zero	1	2	3	4	5
1	3	14	7	18	22	36
2	3	4	13	16	14	10
3	3	8	13	23	31	22
4	3	53	12	13	7	12
22	3	18	12	15	24	27
23	3	7	10	13	30	38
24	3	18	7	21	23	27
25	4	28	14	19	18	18

TABLE 13

PORTION OF VARIABLE MATRIX

Mean Teacher Score on Decision Involvement
Mean Teacher Score on Representation

Values from Pilot			
I & R Unit (Names Withheld)	Decision Involvement	Representation	Difference
1	77.00	84.33	7.33
2	53.20	58.80	5.60
3	53.23	49.00	-4.2
4	54.75	63.50	8.75
5	43.00	67.00	24.00
6	62.00	75.25	13.25
7	52.50	55.75	3.25
8	72.80	79.00	6.20
9	62.27	72.33	9.66
10	87.50	96.50	9.00
11	85.00	85.00	0.00
			82.84
		Average Difference	7.53

was 7.53. This trend continued in main data and this pattern was utilized to supply missing Representation scores if all the other sections in the instrument set were present for the individual and the other individual response sets of a unit were complete. In other words, if an individual teacher omitted the Representation section instead of supplying one for each item response or dropping the individual's set of responses, the scale totals and the Representation total were supplied by adding the average difference to the decision involvement score. This seemed to reflect accurately the data pattern from the pilot and saved four individual's response sets which would have otherwise been dropped from the combined pilot and main study data.

The test statistics also included in the output a table showing item correlations to total instrument and to scale scores. Table 14 gives these statistics for the first thirteen items of Decision Involvement and Representation. It can be seen by examining these correlations that all items correlated more strongly to scale than to total instrument except item ten which was a new item added after scales were devised from the first factor analysis. In the later discussion of the factor analysis, it will be seen that item ten again showed up in a way that made it appear as misplaced in scale two. Since it appeared with all scale one items in the second factor analysis, it seemed to have more power than scale two placement would warrant.

TABLE 14

ITEM CORRELATIONS TO TOTAL AND SCALE DECISION INVOLVEMENT AND REPRESENTATION

Decision Involvement

Item Scale	R(Total)	R(Scale)
1....2	.5409	.5897
2....1	.3939	.5940
3....2	.6405	.7021
4....1	.5578	.6635
5....3	.5343	.5679
6....1	.2959	.5178
7....3	.6207	.6425
8....2	.4797	.5542
9....2	.4273	.5218
10....2	.4871	.4556*
11....3	.3697	.4199
12....3	.5808	.6991
13....1	.3995	.4655

*Note: Item 10

TABLE 14 (continued)

Representation		
Item Scale	R(Total)	R(Scale)
1....2	.4696	.5551
2....1	.2808	.5560
3....2	.5608	.6167
4....1	.5811	.7227
5....3	.5646	.6281
6....1	.3010	.5386
7....3	.6435	.6972
8....2	.4977	.5610
9....2	.6779	.7218
10....2	.6589	.6171*
11....3	.3913	.4423
12....3	.6472	.7313
13....1	.4871	.5722

*Note: Item 10

Means and Ranges of Values-Matrix of Variables (Unit Scores)

The DSTAT2 program yielded as part of its descriptive statistics package the means and ranges on all forty-five variables. Table 15 gives this information for the three main variables and also for the six situational variables.

These statistics have some interest. The average number of staff was close to four. The average number of meetings for a unit was less than two. There was a wide range of pupils, 57 to 203. The mean released time for the unit leader to carry out the administrative tasks of the position was less than one-half hour. The mean degree status for unit leaders was just above a bachelor's degree, with the range showing no Ph.D.s The mean unit pupil load was 27.

The two main independent variables showed a trend toward the lower end of the range. Decision Involvement showed a range of 27.67 to 92.80. (The highest possible score would be 125.00 and the lowest possible would be 25.00.) Representation showed a range of 31.00 to 96.50 and the highest and lowest possible are the same as for Decision Involvement, 125.00 to 25.00. The range went from very low but never reached very high on either Decision Involvement or Representation. Effectiveness showed a mean of 178.52, ab[illegible] the midpoint of the possible range, and the mean unit scores ranged from 110 to 229.50, while the possible range was 51 to 255.

TABLE 15

MEAN RANGE FOR THREE MAIN VARIABLES AND SIX SITUATIONAL VARIABLES

Variable Name	Mean	Minimum	Maximum
Staff	4.12	2.00	7.00
Meetings	1.77	.00	5.00
Pupils	111.17	57.00	203.00
Released Time for Unit Leader	1.87*	1.00*	5.00*
Degree Status for Unit Leader	1.37**	1.00**	2.00**
Unit Pupil Load	27.23	17.00	37.50
Decision Involvement Total Score-Mean of Unit Leader and Teachers	66.52	27.67	92.80
Representation Total-Mean of Unit Leader and Teachers	71.70	31.00	96.50
Effectiveness	178.52	110.50	229.50

*1 = No Release time
2 = 0 - ½ Hour
3 = ½ Hour to 1 Hour
4 = 1 Hour to 1 = Hour
5 = 1= Hours or More

**Degree Status, 1 = Bachelor's Degree, 2 = Master's Degree, 3 = Ph.D.

Factor Analysis of the Decision Involvement and Representation Index

The Decision Involvement and Representation Index was utilized for the first time in this study. The details of the decision involvement instrument itemization and development were discussed in detail in the second chapter. The scales were devised from a factor analysis of an earlier instrument containing 49 items. Since there were some items in which wordings were changed, omissions were made, and items added, a second factor analysis was run on the 188 responses on the Decision Involvement section of this index. The factor analysis was run to reevaluate the scales.

According to Thorndike, "Factor analysis reorganizes a table of correlations to emphasize convergences."[7] The items on scale one were theorized to contain a common factor labeled Money-Sanctions-Rewards; on scale two, Nonpowerful Curriculum; on scale three, Powerful Curriculum. It was suggested that scale one items would be more reluctantly relinquished by administrators and that scale three decision items would also be more carefully guarded; while scale two items were those decisions quite often submitted to teachers for participative decision making.

Table 16 shows the means of the item scores grouped by scale. It can be seen that scale two items showed the highest means (with an average mean of 3.0399), scale one showed the lowest means (with

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[7] Robert L. Thorndike, EDUCATIONAL MEASUREMENTS (Washington, D.C.: American Council on Education, 1971), p. 449.

TABLE 16

DECISION INVOLVEMENT DESCRIPTIVE STATISTICS ITEM MEANS

Scale I Money Sanctions Rewards	Scale II Non-powerful Curriculum	Scale III Powerful Curriculum
(2) 1.70	(1) 3.18	(5) 3.09
(4) 1.73	(3) 3.22	(7) 2.75
(6) 1.97	(8) 3.16	(11) 1.87
(13)**2.72	(9) 3.29	(12) 3.13
(14) 1.58	(10)* 2.70	(15) 2.37
(18) 2.70	(17) 3.09	(16) 2.25
(19) 2.04	(20) 2.54	(22) 3.14
	(21) 3.03	(24) 3.16
	(23) 3.50	
	(25) 2.66	
Average of Means 2.07	Average of Means 3.04	Average of Means 2.72

(Item number is in parentheses)

*Item wording changed.
**Item not in instrument when scale was conceptualized.

an average mean of 2.0668), and scale three occupied a place in the middle (with an average mean of 2.724).

Item ten, which had a rather low mean for a scale two item, was an item which was new to the instrument. On the forerunner instrument, the factor analyses of which suggested the scale rationale, item 13 read "The Budget for the School" and in this study the wording was changed to "The items to be included in the budget for the school." This wording may have inferred a different type of decision. The former wording suggests, perhaps, decision involvement in how much money will be allocated to each unit and the latter wording may mean decision involvement in how to spend money which administrators have already allocated in certain amounts to each unit.

As Thorndike stated, "Tests (or scales) that by hypothesis are indicators of a certain construct are expected to show substantial loadings on the same factor. When one of them loads on a second factor this shows that the indicator is impure."[8] Table 17 shows the results of the four factor solution. Table 18 lists the factors with their eigenvalues and the percentage of variance accounted for.

The scales held up to a certain extent. Powerful and Non-powerful curriculum items showed overlap. Scale one came out well except for the new item which was misplaced in scale two. The fourth factor, the weakest, was a mixture of scale two and three items (curriculum) with a scale one item which had a weak loading (.439)

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[8] Ibid.

TABLE 17

DECISION INVOLVEMENT FACTOR ANALYSIS

Name Item No.	Present Scale No.	Scale 2	Scale 3	Scale 1	
		3	16	2	20
3	2	.727	-.040	.208	.237
23	2	.679	-.218	.048	-.011
24	3	.659	-.265	.142	-.057
17	2	.601	-.243	.271	-.019
1	2	.599	-.036	.192	.239
5	3	.555	-.179	.130	.168
7	3	.469	-.337	.423	-.055
9	2	.440	-.257	-.237	.360
8	2	.289	-.474	-.023	.183
22	3	.401	-.502	-.052	.208
*13	1	.191	-.546	-.010	.006
25	2	.358	-.587	-.110	.147
12	3	.225	-.594	.217	.049
15	3	-.008	-.651	.322	-.024
16	3	.042	-.675	.158	.069
2	1	.192	.006	.736	-.111
**10	2	.116	-.112	.600	.251
6	1	.032	.027	.575	.077
18	1	.299	-.124	.560	.109
4	1	.250	-.232	.504	.156
14	1	-.142	-.324	.474	.421
20	2	.242	-.076	.004	.809
11	3	-.088	-.061	.322	.590
21	2	.378	-.042	.105	.577
19	1	.104	-.422	.389	.439

*Item wording changed from "Budget of the School" to "The items to be included in the budget of the school." Item has less power with new wording.

**Item not in instrument when factors were conceptualized. "The assignment of students to units." Item has more power than scale 2.

TABLE 18

DECISION INVOLVEMENT FACTOR ANALYSIS

	Scale Placement	Eigenvalues	Variance Accounted For in Percentage
Factor 1	(2)	3.770	15.080
Factor 2	(3)	3.121	12.484
Factor 3	(1)	2.911	11.644
Factor 4	-	2.207	8.828

The total amount of variance accounted for by the four factors is 48 per cent.

and had a loading on scale one's factor (.389) which was close to the loading on the unidentified factor under which it fell by this computer analysis. The item read, "The assignment of teachers, student teachers, and aides." This conceptually seems like a powerful decision items. Its mean was 2.043, which reads "Provided information regarding decision," a fairly low decision involvement.

The factor analysis of the Decision Involvement section of Decision Involvement and Representation Index showed some support for the scales which were not made evident to the respondents in the test instruments but were used as variables in the correlations. One of them showed up in the stepwise regression analysis in a significant fashion. These scales are discussed in later analyses.

Correlation and Multiple Regression Analysis

Correlation Analysis to Test Hypotheses 1, 2, 4, 5, and 7

The variables matrix which resulted from the compositing of individual teacher and unit leader scores was analyzed by DSTAT2, a computer program which includes in its possible output: a correlation matrix, Fisher's Z-transformation of the correlations, and levels of significance of the Z-transformations.[9] These output options were used to test hypotheses 1, 2, 4, 5, 6, and 7.

Hypothesis one stated, "There is no relationship between unit teachers' perceptions of involvement in decision making by the IIC and the unit teachers' perceptions of the effectiveness of the I and R unit." Hypothesis two stated, "There is no relationship between the unit teachers' perceptions of representation through their unit leader serving on the IIC and unit teachers' perceptions of the effectiveness of the I and R unit." To test these hypotheses, the unit teachers' total scores on the two independent variables, decision involvement and representation and the dependent variable, effectiveness, were analyzed to show their correlations, their Z-transformations, and their significance levels. Also included in the analysis were the unit teachers' scale scores on Decision Involvement and Representation.

Table 19 shows the above-mentioned correlations for the independent variables decision involvement and representation, and the

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[9] Wetterstrand, Learn, and Wolfe, DSTAT2: DESCRIPTIVE STATISTICS AND CORRELATIONS, pp. 1-1.

TABLE 19

CORRELATIONS Z-TRANSFORMATIONS SIGNIFICANCE LEVELS

Independent Variables:	Decision Involvement, Unit Leader and Teacher's Perceptions
	Representation, Unit Leader and Teacher's Perceptions
Dependent Variable:	Effectiveness of the I & R Unit Unit Leader and Teachers' Perceptions

Variable Name: Effectiveness	r	z	p≤
Decision Involvement (1)	.532	3.976	.0005
Decision Involvement (2)	.596	4.607	.0005
Decision Involvement (3)	.678	5.536	.0005
Decision Involvement Total	.700*	5.824*	.0005*
Representation (1)	.531	3.969	.0005
Representation (2)	.64[illegible]	5.143	.0005
Representation (3)	.679	5.552	.0005
Representation Total	.700*	5.818*	.0005*

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*Tests for Hypotheses (1) and (2)

dependent variable, effectiveness. The correlations between unit teachers' perceptions of decision involvement and unit teachers' perception of representation and unit effectiveness were .700 in both instances. The correlations from total scores on Decision Involvement and Representation were higher than any of the correlations from scale scores. Scale 3 scores for both Decision Involvement and Representation showed correlations very close to those shown for total scores, .678 and .679 respectively.

Table 19 also shows the Z-transformations and Z-transformation significance levels resulting from the correlations. The Z-transformations were utilized to obtain the significance levels. Being large they presaged the values in the Z-transformations significance levels. All the correlations on totals and on scales, between decision involvement and effectiveness, and between representation and effectiveness were significant beyond the .01 level of confidence. Null hypotheses one and two were, therefore, rejected.

Hypothesis four stated, "There is no relationship between the unit leader's perception of the extent of involvement in decision making by the IIC and the unit teachers' perceptions of the effectiveness of the I & R units." Hypothesis five stated, "There is no relationship between the unit leader's perception of representation on behalf of the I & R unit teachers in the IIC and the unit teachers' perception of the effectiveness of the I & R unit." To test these hypotheses the three main variables were fed into the correlation matrix as before, but this time the unit leader scores were used for the independent variables, decision involvement and representation.

Table 20 shows the correlations to test hypotheses four and five. The values were .569 and .581, respectively. Table 20 shows the Z transformations of the correlations which were 4.335 and 4.458, and the resulting significance levels. The matrix shows that the correlations between the unit leader's perception of decision involvement and unit teachers' perception of effectiveness of the I & R unit were high enough to be significant at the .0005 level of confidence. Null hypothesis four, therefore was rejected. The matrix also showed that the correlation between the unit leader's perception of representation on behalf of her unit in the IIC and unit teachers' perception of the effectiveness of the I & R unit were high enough to be significant at the .0005 level of confidence. Null hypothesis five, therefore, was rejected.

Hypothesis seven stated, "There is no relationship between unit teachers' perceptions of representation as provided by their leader and unit teachers' perceptions of the extent of involvement in decision making by the IIC." A matrix showing the correlation of all 45 variables gave the value .912 as the correlation between unit teachers' perceptions of decision involvement and unit teachers' perceptions of representation as provided by their leader. This correlation was significant at the .0005 level of confidence. It had already been observed that there was a close parallel between responses on the two measures when the test statistics were examined. These values for correlation and significance level allowed, therefore, rejection of null hypothesis seven.

TABLE 20

CORRELATIONS Z-TRANSFORMATIONS SIGNIFICANCE LEVELS

INDEPENDENT VARIABLES DECISION INVOLVEMENT AND REPRESENTATION - U.L.

DEPENDENT VARIABLE - EFFECTIVENESS (U.L. & L.)

Variable Name	Effectiveness r	Unit Leader z	& Teachers p ≤
Variable Name			
Decision Involvement (1)	.477	3.480	.001
Decision Involvement (2)	.491	3.605	.0005
Decision Involvement (3)	.499	3.680	.0005
Total U.L.	.569*	4.335*	.0005*
Representation (1)	.444	3.201	.001
Representation (2)	.516	3.833	.0005
Representation (3)	.537	4.022	.0005
Total U.L.	.581*	4.458*	.0005*

*Tests for Hypotheses (4) and (5)

Ancillary question 4 asked, Do the following situational factors relate systematically to the effectiveness of the I & R units? Listed as factors were: (a) class load of unit, (b) frequency of unit meetings, (c) released time for unit leader, (d) degree status of unit leader. These factors were placed into the DSTAT2 program to obtain their correlation to the dependent variable, effectiveness of the I & R unit. Also, the number of staff (teachers) and the number of pupils was included in the calculation since the information was readily available and it was thought that the results could potentially yield some useful correlations. Table 21 gives the correlations for these situational variables and the main dependent variable. Table 21 also shows the significance levels for these variables.

Examination of this table showed that the situational variables, staff, pupils, and degree status of unit leader had correlations close to zero. Situational variables, meetings, released time for unit leader, and unit load had correlations of .227, .210, and .215, respectively. These were low correlations and the significance levels showed .122, .153, and .144, respectively, for each. These values indicated that the situational variables were not significantly related to the dependent variable, effectiveness. However, two situational variables, meetings and pupils, showed up significantly in the stepwise regression analysis, which will be discussed next.

Stepwise Regression Analysis

A stepwise linear regression analysis was run using the 45-variable matrix. This procedure allowed the variable which contributed

TABLE 21

CORRELATIONS Z-TRANSFORMATIONS SIGNIFICANCE LEVELS

Situational Variables:	Staff
	Meetings of I&R Unit/Week
	Pupils
	Released Time-Unit Leader
	Degree Status U.L.
	Unit Pupil Load
Dependent Variable:	Effectiveness of I&R Unit

Variable Name: Effectiveness	r	z	$p \leq$
Staff	-.097	-.649	.516
Meetings	.227	1.548	.122
Pupils	-.050	-.338	.735
Released Time	.210	1.431	.153
Degree	-.002	-.011	.991
Unit Load	.215	1.462	.144

most to the variance of the dependent variable to enter the multiple regression equation first.

This procedure is repeated for as many steps as the user requests For this analysis, 15 steps were requested. This analysis was performed by STEPREG1: Stepwise Linear Regression Analysis.[10]

> If one finds three or four independent variables that are substantially correlated with a dependent variable and not highly correlated with each other, one is lukcy. But it becomes more and more difficult to find other independent variables that are not ineffect redundant with the first three or four.[11]

Table 22 shows the results of the stepwise procedure after four variables had been entered into the multiple regression analysis. The first variable to enter the multiple regression was not a variable to be tested as stated in the seven major hypotheses, but a variable taken from the scale scores on decision involvement. It was Scale III, Powerful Curriculum, teacher scores (unit leader scores not included). A reexamination of the total correlation matrix revealed that the correlation of the total scores of unit leaders and teachers on the Decision Involvement measure with the total scores of unit leaders and teachers on the measure for effectiveness was lower than the correlation between teachers' scores on Scale III of Decision Involvement and unit leader's and teachers' scores on the measure for

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[10] James R. Allen, STEPREG1: STEPWISE LINEAR REGRESSION ANALYSIS, (Madison, Wisconsin: Academic Computing Center), 1973.

[11] Fred N. Kerlinger, FOUNDATIONS OF BEHAVIORAL RESEARCH, 2nd ed.; (New York: 1973), p. 625.

TABLE 22

STEPWISE LINEAR REGRESSION ANALYSIS

$R = .78 \quad F = 17.10\ (4,43) \quad p \leq .00005$

Variable	Standardized Regression Coefficient	Partial Correlation Coefficient	Significance Level
Effectiveness, Total Unit Leaders and Teachers Dependent Constant			
Decision Involvement Scale 3, Teachers	.6282	.652	.0000
Meetings per Week	.1941	.297	.0475
Representation Scale 2, Unit Leader	.2258	.299	.0461
Pupils	.1985	-.297	.0476

Note: Variables are listed in [illegible]der in which they entered the regression equation.

effectiveness. The correlation for Scale III teachers' decision scores with total effectiveness, unit leader's and teachers' scores was .706. This may be compared to the correlation for total decision, unit leader and teachers, and effectiveness, unit leader and teachers which is .700. While the difference was small it would have gone unnoticed without the forward stepwise regression analysis, which demonstrates the value of this particular procedure. With a large number of variables, the computer program will bring up the most important variable in explaining variance and the choice may prove to be an unexpected one, as it was here.

The next three variables in the order of their appearance were: meetings per week (a situational variable), representation scale 2, unit leader scores, and pupils (another situational variable). Meetings and representation scale 2 correlated positively with the variable effectiveness. Levels of significance for their contribution to variance of the dependent variable after four variables have been entered were .0475 (meetings) and .0461 (representation scale 2). Pupils, the fourth variable to enter, was negatively correlated with effectiveness and the significance level of the correlation was .0476. The corrected coefficient of determination after these four variables were entered was .5781.

The summary of the forward stepwise regression analysis is shown in Table 23. It showed a coefficient of determination of .7132. As Allen said, "The coefficient of determination, often called R-squared, is the square of the multiple correlation coefficient, and it is the

TABLE 23

MADISON ACADEMIC COMPUTING CENTER PROGRAM STEPREG

PARTICIPATIVE DECISION MAKING MAIN STUDY

SUMMARY OF STEPS IN STEPWISE REGRESSION

Step No.	Variable	Coefficient of Multi.Correlation	Coefficient of Determination	Change of Coefficient of Determination	Significance Level	Number of Variables in the Equation
1	14 DI3T	.706	.498	.498	.000	2
2	2 MIGS	.736	.542	.044	.044	3
3	22 REP2UL	.759	.577	.035	.064	4
4	3 PUPS	.785	.614	.037	.048	5
5	15 DI3ULT	.793	.628	.014	.209	6
6	27 DITOTUL	.804	.647	.018	.155	7
7	16 DITOTUL	.815	.664	.017	.159	8
8	17 DITOTT	.822	.675	.011	.255	9
9	4 RETM	.824	.679	.005	.471	10
10	19 REP1UL	.827	.683	.004	.498	11
11	30 RTOTULT	.8300	.689	.006	.428	12
12	29 REPTOTT	.835	.698	.009	.318	13
13	1 STAFF	.839	.704	.006	.404	14
14	5 DEG	.842	.709	.006	.431	15
15	10 D12UL	.845	.713	.004	.533	16

Elapsed time at end of analysis of this model 9.011 seconds percent of the total variation of the dependent variable explained by all of the independent variables currently in the equation."[12] This indicated that 71.32 per cent of the variance in the variable effectiveness was accounted for after the entry of 15 independent variables. It also indicated the changes in the coefficient of determination as each variable entered. After entry of the eighth variable, the percentage of variance accounted for dropped to less than 1 per cent. Two more situational variables entered at steps 14 and 15. They were, in the order of their appearance: number of staff teachers and degree status of unit leader. The significance levels of their contribution to variance and hence of their appearance were .431 and .533 respectively.

Multiple Regression Analysis to Test Hypotheses 3 and 6

Hypothesis three stated, "There is no relationship between the unit teachers' perceptions of extent of involvement in decision making by the IIC and the unit teacher's perceptions of representation through their unit leader and the unit teachers' perceptions of effectiveness of the I & R unit." REGAN2,[13] a computer program in the STATJOB series, was utilized to make this analysis. As Cooley said. "The best known method of multivariate analysis is multiple-regression analysis, which is used to examine the relationship between a criterion or dependent variable and two or more predictors or independent variables."[14] REGAN accomplishes this by a determination of the least squares estimate of one or more multiple lenear regression models by solving the normal equations.

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[12] James R. Allen, STEPREG1, pp. 3-4.

[13] James R. Allen and Jeremy M. Learn, REGAN2: MULTIPLE LINEAR REGRESSION ANALYSIS (Madison, Wisconsin: Academic Computing Center, 1971).

The variables for testing Hypothesis three were the unit teachers' total test scores on Decision Involvement, Representation, and Effectiveness (I & R Unit Operations Questionnaire). These variables were placed in a regression model with the latter as the dependent variable and the former two as the independent variables. Table 24 shows the results of the regression analysis.

The multiple correlation coefficient was fairly high .7161. The percentage of variance in the Effectiveness scores which was eliminated by the knowledge of the two independent variables is determined the coefficient of determination, which was .4912. The probability for this occurring due to chance is indicated by the significance level of the multiple correlation coefficient which was less than .0005. This was beyond the .01 level of confidence,therefore, null hypothesis three was rejected.

The multiple correlation coefficient from the regression analysis in Table 24 yielded a value of .7161. This may be compared to the correlation of decision involvement alone to effectiveness, a value of .700 and to the correlation of representation alone to effectiveness, a value of .700 also. As dual predictors the two

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[14] William W. Cooley and Paul R. Lohnes, MULTIVARIATE PROCEDURES FOR THE BEHAVIORAL SCIENCES, (New York: John Wiley, 1962), p. 5.

TABLE 24

MULTIPLE REGRESSION ANALYSIS

Independent Variables: Decision Involvement - Unit Leader and Teachers
Representation - Unit Leader and Teachers

Dependent Variables: Effectiveness - Total Scores Unit Leader and Teachers

Standard Error of Estimates..............	18.6720
Multiple Correlation Coefficient.........	.7161
Coefficient of Determination............	.5128
Corrected Coefficient of Determination...	.4912

Variable	Type	Regression Coefficient	Std. Error of Regression Coefficient	Standardized Regression Coefficient	Partial Correlation Coefficient	Partial F Value with 1 Deg.Freedom	Sig. Level
Effectiveness U.L. & T.	Dependent	---	---	---	---	---	---
	Constant	92.1374	12.9102		.729	50.93396	.0000
Decision Inv.	Independent	.6692	.4605	.3687	.212	2.11196	.1531
Representation U.L. & T.	Independent	.5840	.4084	.3637	.209	2.05477	.1586

F-Ratio = 23.6 with 2 and 45 Deg. Freedom
Significance Level of F-Ratio = .0001

variables did not add much to the variance accounted for, over either variable used as a single predictor.

Hypothesis six stated, "There is no relationship between the unit leader's perception of extent of involvement in decision making by the IIC and the unit leader's perception of representation she (or he) perceives herself (or himself) to provide for the I & R unit by serving on the IIC and the unit teachers' perceptions of the effectiveness of the I & R unit."

The appropriate variables, Decision Involvement and Representation, total scores for unit leaders, and Effectiveness, and total scores for unit leaders and teachers were placed in a regression model for analysis. Table 25 gives the results of this regression analysis. Examination of the table shows the corrected coefficient of determination to be .3256, a value lower than that obtained when the independent variables were the scores of unit leaders and teachers together. The multiple correlation coefficient was .5932, lower than when unit teachers' scores were used, and finally the standard error of estimate was 21.497 compared to 18.6720 obtained with teachers scores as predictors. The significance level of the F-ratio was .0001. Null hypothesis six, therefore, was rejected.

It is also of interest to look at the variables as scale scores in the regression model. Unit teachers' scores on Decision Involvement and Representation on scale 3 (based on the factor titled "Powerful Curriculum") when used as independent variables resulted in a corrected coefficient of determination of .4847 which compares very

TABLE 25

MULTIPLE REGRESSION ANALYSIS

Independent Variables: Decision Involvement - Unit Leader only
Representation - Unit Leader only

Dependent Variable: Effectiveness - Unit Leader and Teachers

Standard Error of Estimate.............. 21.4970
Multiple Correlation Coefficient........ .5952
Coefficient of Determination............ .3543
Corrected Coefficient of Determination... .3256

Variable	Type	Regression Coefficient	Std. Error of Regression	Standardized Regression Coefficient	Partial Correlation Coefficient	Partial F Value and 45 Deg.Freedom	Sig. Level
Effectiveness	Dependent	----	----	----	----	----	----
U.L. & T.	Constant	110.6534	14.0230		.762	62.26554	.0000
Decision Inv.	Independent	.4000	.3758	.2598	.157	1.13245	.2929
Representation	Independent	.5456	.3752	.3550	.212	2.11390	.1529

F-Ratio = 12.34 with 2 and 45 Deg. Freedom
Significance Level of F-Ratio = .0001

closely to .4912 the value obtained when total scores were used. The F-ratio of 23.000 using scale 3 scores was significant beyond the .0001 level of confidence.

Distribution of High-Low Response on the Two Independent and Dependent Variables

In Chapter II (See Table 1) it was theorized that if both decision involvement and representation were high, effectiveness scores would be high. It was also speculated that if either decision involvement or representation were low, effectiveness would be low since lack of decision involvement by or representation were low, effectiveness would be low since lack of decision involvement by the IIC and lack of representation would block teacher involvement in decisions affecting their work tasks.

The pattern of high-low response on the three variables was investigated utilizing CROSTAB2, a computer program from the STATJOB series.[15] This program has the capabilities of producing cross classification tables of values of selected variables from a data set.

First the scores were obtained in a listing with frequency count and cumulative percentiles. The score which represented the midpoint for each variable was noted. These were as follows: Decision Involvement 67, Representation 74, and Effectiveness 178.

---

[15] Peter J. Wolfe, James R. Allen, and Ralph C. St. John, CROSTAB2: DATA TABULATION, (Madison, Wisconsin: Academic Computer System, 1975).

These scores divided the responses into high-low categories. These parameters and the 188 individual observations were put into the appropriate CROSTAB2 model and analyzed to discover the response pattern. Table 26 shows the tabulation which resulted.

As may be observed from the data of Table 26, there were concentrations in the cell labelled high on all three variables and low on all three variables. These patterns follow the expectations from the regression results which showed the two independent variables to be positively correlated with the dependent variable.

The cells which are high on decision involvement and low on representation or low on decision involvement and high on representation have low frequencies fairly evenly distributed between low and high effectiveness. Two cells are starred. These are the (1) the cell labelled low on both decision involvement and representation, but high on effectiveness (frequency count 14); (2) the cell labelled high on both decision involvement and representation and low on effectiveness (frequency count 20). One cannot say how high they can range before one might question whether these counts occurred by chance at the level of 14 and 20, or if there might be another independent variable or intervening variable operating--a variable not identified in this study. Probably both phenomena are operating.

The top section of the table which has the constraint of low representation had a phi coefficient of . 2 and the bottom section with the constraint of high representation had a phi coefficient of .21. This statistic is called phi and is explained by Glass as

TABLE 26

PATTERN OF HIGH-LOW RESPONSE ON THREE MAIN VARIABLES

Effectiveness, the Dependent Variable

	LOW	HIGH		
DI LOW REP LOW	60	14 *	74	Probability .0001 Phi .42
DI HIGH REP LOW	4	11	15	
DI LOW REP HIGH	10	9	19	Probability .0377
DI HIGH REP HIGH	20 *	60	80	Phi .21
	94	94	188	Total

Each cell shows a frequency count based on dichotomized scores on the three main variables.

*See text for comment.

as follows: "The Pearson product-moment coefficient calculated on nominal-dichotomous data is called the phi coefficient and is denoted by ϕ."[16]

The probability for the frequencies exhibited in the top section to have occurred by chance of the table was .001 and for the bottom section, .0377.

Comparison of Means

Analysis of Means: Comparison of Unit Leader and Teachers' Scores

Ancillary questions 1, 2, and 3 asked for a comparison of the means between unit leader scores and teachers' scores on measures of the three main variables, decision involvement, representation, and effectiveness. A program to compute t-tests on correlated means was written by Donald N. McIsaac. This program was utilized to provide the t-tests and standard scores for the differences between means to determine their significances. The formula used for this computation is as follows:

$$t = \frac{M_1 - M_2}{\sqrt{\sigma M_1 + \sigma M_2 - 2r \, \sigma M_1 \, \sigma M_2}}$$ [17]

---

[17] J. P. Guilford, FUNDAMENTAL STATISTICS IN PSYCHOLOGY AND EDUCATION, (New York: McGraw-Hill, 1965), p. 174.

The total mean scores for unit leaders and teachers on measures of the three main variables were analyzed using this program. The mean scale scores for leaders and teachers were also compared. Table 28 gives the results of these comparisons. The unit leader mean scores on all measures were higher than the teacher mean scores on the same measures, but only two pairs of means were significantly different. The unit leader means for Decision Involvement scale two and the teacher means for the same measure were significantly different at the .01 level of confidence. The unit leader means for Decision Involvement total and the teacher means for the same measure were significantly different, at the .05 level of confidence. Both of these comparisons, while significant, showed a standard score barely large enough to pass the significance level. The trend of scores for measuring perceptions on decision involvement, representation, and effectiveness was higher for unit leaders than for teachers, but not significantly higher except in two instances. In these two cases the differences in means were modest in size.

TABLE 27

t-TESTS COMPARISON OF MEANS OF UNIT LEADER AND TEACHER MEAN TOTAL AND SCALE SCORES OF THE THREE MAIN VARIABLES

(EFFECTIVENESS TOTALS ONLY)

	Teachers Mean$_1$	Unit Leaders Mean$_2$	SD$_1$	SD$_2$	Correlation of Means	Standard Score of the Difference
DI (1)	14.575	14.792	4.261	5.161	.542	- .3250
DI (2)	29.773	32.292	7.430	7.820	.688	-2.8620**
DI (3)	21.148	22.687	5.521	6.764	.650	-2.0052
DI tot	65.495	69.771	14.765	17.005	.640	-2.1507*
RE (1)	16.900	16.396	5.095	5.181	.704	.8739
RE (2)	32.429	33.479	8.268	7.776	.623	-1.0313
RE ((3)	22.122	23.375	6.094	6.683	.648	-1.5946
RE tot	71.451	73.250	17.033	17.425	.673	- .8849
ET tot	177.010	182.500	28.838	28.015	.686	-1.6698

**Significant at the .01 level
*Significant at the .05 level

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Technical Report No. 356 (Part 2 of 2 Parts)

PARTICIPATIVE DECISION MAKING IN IGE/MUS-E SCHOOLS

by

Constance M. Nerlinger

Report from the Project on Organization
for Instruction and Administrative
Arrangements

James M. Lipham
Principal Investigator

Wisconsin Research and Development
Center for Cognitive Learning
The University of Wisconsin
Madison, Wisconsin

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WISCONSIN RESEARCH AND DEVELOPMENT CENTER FOR COGNITIVE LEARNING

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Finally, I wish to dedicate this investigation to all children who wait for better schools, to teachers who want to serve and are frustrated at times, and to administrators enmeshed in real situations, in the faith that research will inevitably bring productive change.

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ABSTRACT

The purpose of this study was to examine the relationships of the Instructional Improvement Committee's involvement in decision making, the representation of teachers on the Instructional Improvement Committee (IIC), and the effectiveness of the Instruction and Research (I&R) Unit in Individually Guided Education/Multiunit Elementary Schools.

The theoretical base for this study was the model of administration as a social process which states that one's need-dispositions and role expectations ideally converge to product effective behavior. The IIC was examined as an organizational structure which allows for the inclusion of people in the planning of work goals and in the administration of tasks which affect them to the benefit of the enterprise (the school).

Three major variables were examined. Extent of involvement in decision making was defined at teachers' perceptions of the level to which the IIC participates in decision-making processes in the school. Representation was defined as the degree to which teachers feel they are represented in the decision processes of the IIC through their unit leader who may convey their ideas, opinions, and/or misgivings to the IIC, and thereby influence administrative decision making in response to such input. Effectiveness was defined as the joint accomplishment by unit teachers of the I & R unit's objectives as stated in the description of the IGE/MUS-E model.

In addition, six situational variables were identified as being factors which might account for some variation in the dependent variable, effectiveness. These were: unit load (number of pupils per unit teacher) frequency of I & R unit meetings, released time for the unit leader, and degree status of the unit leader. Total number of pupils in the I & R unit, and the total number of teachers in the unit.

Seven hypotheses were developed to test the relationship of extent of involvement in decision making and representation to effectiveness of the I & R unit as perceived by (1) unit teachers, (2) the unit leader, and (3) both unit teachers and unit leaders. Ancillary questions were posed to compare the perceptions of unit teachers and unit leaders and to examine the relationships of the institutional variables to I & R unit effectiveness.

Two instruments were developed to measure the three main variables. The Decision Involvement and Representation Index allowed each of twenty-five decision items to be assessed as to (1) the extent of involvement by the IIC, and (2) the representation provided by the unit leader. Effectiveness, was assessed by the I & R Unit Operations Questionnaire.

Data were collected from 48 randomly selected I & R units in IGE/MUS-E schools in 12 states.

Pearson product-moment correlations, multiple regression equations, and t-tests were used to test the hypotheses and ancillary questions. Subsidiary information was obtained through the use of factor analysis, multiple stepwise linear regression analysis, and a cross tabulation process. The probability level for all tests of statistical significance was established at .05.

The major conclusions were as follows:

1. Extent of involvement decision making by the IIC was significantly related to effectiveness of the I & R unit.

2. Representation for teachers provided by the unit leader serving on the IIC was significantly related to the effectiveness of the I & R unit.

3. Extent of involvement in decision making and representation together were significantly related to effectiveness of the I & R unit.

4. Extent of involvement in decision making and representation, the two independent variables, were closely related constructs.

5. Frequency of meetings and total number of pupils in a unit were related to the effectiveness of the I & R unit, but only after accounting for the two main independent variables. These two situational variables did not contribute greatly to the variance of effectiveness.

6. Teachers perceived themselves to be more fully represented than involved in the decision-making process.

7. Extent of involvement in decision making by the IIC schools was perceived by unit leaders and teachers as beyond the stage of providing information--toward the level of developing possible alternatives.

8. Representation for teachers are provided by the unit leader serving on the IIC was perceived as moderate by respondents in this study.

9. Effectiveness of the I & R unit was perceived by unit leaders and teachers as between "somewhat effective" to "effective."

CHAPTER IV

SUMMARY, FINDINGS, CONCLUSIONS, AND IMPLICATIONS

This chapter consists of three sections. The first section contains a summary of the nature of the study. The second section summarizes the findings and states the conclusions of the study. The third section presents implications both for practice and for further research.

Summary

The purpose of this study was to examine the relationships of the Instructional Improvement Committee's involvement in decision making, the representation of teachers on the Instructional Improvement Committee, and the effectiveness of the Instruction and Research Unit in Individually Guided Multiunit Elementary Schools.

The Individually Guided Multiunit Elementary School model grew out of a project developed at the Wisconsin Research and Development Center under the direction of Herbert Klausmeier.[1] It was implemented within Wisconsin on a small scale in 1967. By 1975, IGE/MUS-Es had grown in number to over 2,000 and had expanded into many states.

In the design of this organizational structure, provisions were made to involve all the staff in the IGE school in the sharing of decisions. The model of such a school placed the locus of decision making in the Instructional Improvement Committee (IIC). Representation through the unit leader is the essential line of communication for the unit teacher to the IIC.

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[1] Klausmeier, Goodwin, Prasch, and Goodson, PROJECT MODELS, Occasional Paper No. 3.

Decision making was seen as a twofold process, one that involved representation as discussed above, and another that consisted of different degrees of involvement. Teacher participation was seen to depend on both representation and on the extent of involvement in decision making by the IIC. Extent of involvement was proposed to consist of five steps, based on decision theory as described by Lipham.[3] Extent of involvement could range from no involvement through the steps of providing information, developing alternatives, recommending the decision, to actually making the decision. It was proposed that the successful functioning of this decision process would result in a more effective teaching unit (the I & R unit).

Literature showed some support for a positive relationship between participative decision by teachers and teachers' attitudes. Studies done in industrial settings by Vroom[4] and by Coch and French[5] lent direct support to the premise that participation in decision by workers

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[2] See Figure 2, p. 6.

[3] Lipham and Hoeh, THE PRINCIPALSHIP: FOUNDATIONS AND FUNCTIONS, pp. 155-161.

[4] Vroom, SOME PERSONALITY DETERMINANTS OF THE EFFECTS OF PARTICIPATION.

[5] Coch and French, READINGS IN SOCIAL PSYCHOLOGY, pp. 474-491.

was related to increased production. Representation for workers was also commended in theory by writers. More concrete examples and some research on this variable was found in the literature concerned with workers' councils which are a European phenomena.[6,7,8] These European writers provided support for the concept of workers' representation in the administration of their work task and its beneficial effects on production.

The main underpinning in theory for this study was drawn from the Getzels and Guba Model[9] and its proposition that workers' need-dispositions and role expectations ideally converge to produce effective job behavior.

A search through studies on IGE multiunit schools led to the study by Evers[10] which examined the relationships between leadership behaviors of the unit leaders and the interpersonal relations of unit members to I & R unit effectiveness. Her discovery that three measures of unit leader behavior were significantly correlated with unit effectiveness was a valuable steppingstone to the present study. Three results stood out: (1) leadership behaviors exhibited by the unit

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[6] Emergy & Thorsrud, FORM AND CONTENT IN INDUSTRIAL DEMOCRACY.

[7] Kolaja, WORKERS COUNCILS, THE YUGOSLAV EXPERIENCE.

[8] Sturmthal, WORKERS COUNCILS.

[9] Getzels, Lipham, and Campbell, EDUCATION ADMINISTRATION AS A SOCIAL PROCESS, p. 129.

[10] Evers, Doctoral dissertation, 1974.

leader were significantly related to I & R unit effectiveness, (2) interpersonal relations between unit members were not significantly related to unit effectiveness, and (3) a reliable and valid instrument to measure unit effectiveness had been developed. Other independent variables relating significantly to unit effectiveness remained to be identified, and an instrument to measure unit effectiveness was available for use in further studies.

In the present study, the IIC was conceptualized as an organizational structure which allows for the inclusion of the worker in the planning of work goals and in the administration of tasks which touch him (or her) to the benefit of the enterprise (the school). In this context, three main variables were defined. Extent of involvement in decision making was defined as teachers' perceptions of the level to which the IIC participates in potent decision areas. Representation was defined as the degree to which teachers feel they are represented in the decision processes of the IIC through their unit leader who may convey their ideas, opinions, and/or misgivings to the IIC and thereby influence administrative decision making in response to such input. Effectiveness was defined as the joint accomplishment by unit teachers of the I & R unit's objectives as stated in the description of the IGE/MUS-E model. In this study, therefore, decision involvement and representation were the independent variables and effectiveness of the teaching unit (I & R unit) was the dependent variable.

In addition, four situational variables were identified as being factors which might account for some variation in the dependent variable, effectiveness. These were unit load (number of pupils per unit teacher), frequency of I & R unit meetings, released time for the unit leader, and degree status of the unit leader. Also included were two more situational variables for which data was available and whose inclusion, it was thought, might produce useful information. These were total number of pupils in the I & R unit and the total number of teachers in the unit. This brought the number of situational variables to be examined to be six.

The three main variables were examined as perceived, first, by unit teachers, then, by unit leaders, and then, by unit teachers and unit leaders together. A comparison of these separate perceptions was sought to discover any significant differences that might exist between them and to look at the magnitude of the differences if they did occur.

Three hypotheses were proposed to explore the relationships between unit teachers' perceptions of decision involvement, representation, and unit effectiveness. They were as follows:

(H_1) There is no relationship between the unit teachers' perceptions of the extent of involvement in decision making by the IIC and the unit teachers' perceptions of the effectiveness of the I & R unit.

(H_2) There is no relationship between the unit teachers' perceptions of representation through their unit leader serving on the IIC and the unit teachers' perceptions of the effectiveness of the I & R unit.

(H_3) There is no relationship between the unit teachers' perceptions of extent of involvement in decision making by the IIC and the unit teachers perceptions of representation through their unit leader and the unit teachers' perceptions of the effectiveness of the I & R unit.

Three hypotheses were designed to examine the relationships between the unit leader's perception of extent of involvement in decision making by the IIC, representation provided, and the unit teachers' perceptions of the effectiveness of the I & R unit. They were as follows:

(H_4) There is no relationship between the unit leader's perception of extent of involvement in decision making by the IIC and the unit teachers' perception of the effectiveness of the I & R unit.

(H_5) There is no relationship between the unit leader's perception of representation on behalf of the I & R unit teachers in the IIC and the unit teachers' perceptions of the effectiveness of the I & R unit.

(H_6) There is no relationship between the unit leader's perception of extent of involvement in decision making by the IIC and the unit leader's perception of the representation she (or he) perceives herself (or himself) to provide for the I & R unit by serving on the IIC and the unit teachers' perceptions of the effectiveness of the I & R unit.

Finally, the last hypothesis explored the relationship between unit teachers' perceptions of representation as provided by their leader and unit teachers' perceptions of the extent of involvement in decision making by the IIC. It was stated as follows:

(H_7) There is no relationship between the unit teachers' perception of representation through their unit leader serving on the IIC and the unit teachers' perceptions of the extent of involvement in decision making by the IIC.

Three ancillary questions asked for comparisons of unit leader perceptions and unit teacher perceptions of the three main variables. The fourth ancillary question explored the relationship of the situational variables to the dependent variable effectiveness. These ancillary questions were stated as follows:

1. Do unit leaders and unit teachers differ significantly in the perceptions of extent of involvement in decision making by the IIC?

2. Do unit leaders and unit teachers differ significantly in their perceptions of extent of involvement in decision making by the IIC?

3. Do unit leaders and unit teachers differ significantly in their perceptions of I & R unit effectiveness.

4. Do the following situational factors relate systematically to the effectiveness of I & R units?

(a) Class load of unit
(b) Frequency of unit meetings
(c) Released time for unit leader
(d) Degree status of unit leader

Instrumentation to measure the three main variables was partially solved by using the I & R Unit Operations Questionnaire, a valid and reliable instrument to assess the effectiveness of an I & R unit in a multiunit school. An instrument to measure extent of involvement in decision making and representation was constructed by condensing and restructuring a measure devised by an earlier researcher.[11] The measure reflected the twofold participative decision process by allowing each decision item to be assessed as to (1) the extent of involvement by the IIC and (2) the representation provided by the unit leader. Its validity was assessed by the opinions of experts in the field and at the Wisconsin Research and Development Center and was found to be acceptable. Alpha-coefficients of reliability were assessed and found to exceed .85, an acceptable level.

A random sample was drawn of eleven units from schools which met the criteria for IGE/MUS-E.[12] At the same time and by the same process, sixty-seven units were selected for the main study.

Personal telephone calls were made to each school selected. State IGE coordinators were contacted by letter to outline the purpose of the study and to identify schools who would be asked to participate. A pilot study was run on 11 units to obtain instrument reliabilities and to familiarize the researcher with the data processing procedures and to gain insight into the method of analysis. The pilot data were then combined with the main study data (37 units) to obtain a more substantial number (48 total unit responses). From the original random list of 87 units, 48 usable unit responses were obtained. This was a 55 per cent return. Some data were lost due to reluctance to participate, failure to return materials, incomplete response sets, and tardiness in return of materials.

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[11] Wright, "Development of an Instrument to Measure Real and Ideal Decision Structure", Dissertation proposal, 1974.

[12] See pages 17 and 18.

Existing and original computer programs were utilized to generate the random sample, to obtain Pearson product moment correlations, to solve multiple regression equations, and to run t-tests for comparison of means. These were the techniques used to test the hypotheses and to answer the ancillary questions. Some subsidiary information was obtained through a stepwise regression analysis, a factor analysis of the instrument to measure the independent variables, the test statistics on the three measures, and a cross tabulation of the responses on the three main variables.

Findings and Conclusions

This section contains the important findings drawn from an analysis of the data, tests of the hypotheses, and answers to the ancillary questions. Then, conclusions are drawn from these results. The probability level for all tests of statistical significance was established at the .05 level of confidence.

Findings

Table 28 shows in abbreviated form the relationships for which correlations were sought either with Pearson product-moment correlations or by solving multiple regression equations.

TABLE 28

RELATIONSHIPS OF VARIABLES EXAMINED BY SEVEN HYPOTHESES AND FOUR ANCILLARY QUESTIONS

Variable	Scores Used
Decision Involvement = DI	Unit Teachers = t
Representation = REP	Unit Leaders = ul
Effectiveness = EFF	Unit Teachers and Unit Leaders = ult
Pearson Product-Moment Correlations	Multiple Regression Equations
(1) DI-ult/EFF-ult***	(3) DI & REP-ult/EFF-ult***
(2) REP-ult/EFF-ult***	(6) DI & REP-ul/EFF-ult***
(4) DI-ul/EFF-ult***	T-Tests to Compare Means
(5) REP-ul/EFF-ult***	A1 DI-ul/DI-t*
(7) REP-ult/DI-ult***	A2 REP-ul/REP-t
A4 Unitload/EFF-ult	A3 Eff-ul/EFF-t
Meetings/EFF-ult	
Rel.Time/EFF-ult	
Degree/EFF-ult	

Hypotheses are identified by number. Ancillary questions are identified by the letter A and a number.

***Significant at or beyond the .0005 level
**Significant at or beyond the .01 level
*Significant at or beyond the .05 level

Exploration of Hypotheses One, Two, Four, Five and Ancillary Question Four produced the following correlations and significance levels.

1. Exploration of Hypothesis One produced a correlation between unit teachers' perceptions of involvement in decision making by the IIC and the unit teachers' perceptions of the effectiveness of the I & R unit of .700. This result was significant at the .0005 level of confidence.
2. Exploration of Hypothesis Two produced a correlation between unit teachers' perceptions of representation through their leader serving on the IIC and unit teachers' perceptions of the effectiveness of the I & R unit of .700. This correlation was found to be significant at the .0005 level of confidence.
3. Exploration of Hypothesis Four discovered a correlation between the unit leader's perception of the extent of involvement in decision making of the IIC and the unit teachers' perceptions of the effectiveness of the I & R units of .569. This correlation was found to be significant at the .0005 level of confidence.
4. Exploration of Hypothesis Five discovered a correlation between the unit leader's perception of representation on behalf of the I & R unit teachers in the IIC and the effectiveness of the I & R unit to be .581. This correlation was found to be significant at the .0005 level of confidence.

5. Exploration of Hypothesis Seven discovered a correlation between unit teachers' perceptions of representation through their unit leader serving on the IIC and unit teachers' perceptions of the extent of involvement in decision making by the IIC to be .912. This correlation was found to be significant at the .0005 level of confidence.
6. Examination of data to answer Ancillary Question Four discovered correlations between unit load, frequency of unit meetings, released time for unit leader, and degree status of the unit leader, and unit teachers' perceptions of the effectiveness of the I & R unit of .215, .227, .210, and -.002. None of these correlations were found to be significant at the .05 level of confidence.

Exploration of Hypotheses Three and Six produced the following correlations and significance levels.

1. Exploration of Hypothesis Three produced a multiple correlation coefficient for the relationship between unit teachers' perceptions of the decision involvement of the IIC, the unit teachers' perceptions of representation through their unit leader and the unit teachers' perceptions of the effectiveness of the I & R unit to be .7161 which gave an F ratio of 23.6, significant at the .0005 level of confidence.
2. Exploration of Hypothesis Six produced a multiple correlation coefficient for the relationship between the unit leader's

perception of the extent of involvement of decision making by the IIC and the unit leader's perception of the representation she (or he) perceives herself (or himself) to provide for the I & R unit by serving on the IIC and the unit teachers' perceptions of the effectiveness of the I & R unit at .5952, which yielded an F ratio of 12.34, significant at the .0001 level of confidence.

In summary, all the null Hypotheses One, Two, Three, Four, Five, Six, and Seven were rejected at the .0005 level of confidence. The findings are stated as follows:

1. There were significant relationships between unit teachers' perceptions of the decision involvement of the IIC, the unit teachers' perceptions of representation through their unit leader and their perceptions of the effectiveness of the I & R unit. The correlations between these two independent variables and the dependent variable examined separately found fairly strong correlations which were significant beyond the .01 level, a more stringent test than the level of confidence originally set for testing.
2. There were significant relationships between the unit leader's perception of the decision involvement of the IIC and the unit leader's perception of representation and unit teachers' perceptions of the effectiveness of the I & R unit. Each of these independent variables considered separately with the dependent variable showed fairly strong correlations, significant beyond the .01 level of confidence, which was a more stringent test

than originally set for testing.

3. This same set of independent variables seem first through the perceptions of unit teachers and then through the perception of the unit leader when placed in a multiple regression model with the dependent variable showed the relationship to be strong; it, too, was significant beyond the level set for confidence testing. Both independent variables together did not add much more to the correlation obtained when each independent variable was considered alone. Thus it may be said that the two independent variables are measuring almost the same perception or, at least the two variables are so closely related that either is as good a predictor of the dependent variable, effectiveness, as the two independent variables used together in a multiple regression equation.
4. Consideration of Hypothesis Seven proved that the unit teachers' perceptions of the decision involvement of the IIC and unit teachers' perceptions of the representation provided through their unit leader were very strongly correlated.

The comparisons of means requested in Ancillary Question One, Two, and Three produced these following results:

1. Regarding Ancillary Question One, the t-test for comparison of unit leaders' and unit teachers' mean scores on Decision Involvement showed the unit teachers means to be significantly lower than unit leaders at the .05 level of confidence. The difference barely met the test for significance. The scale two score means on Decision Involvement for the two groups were

significantly different at the .01 level of confidence, unit teachers' being lower than unit leaders.

2. Regarding Ancillary Question Two, the t-test for comparison of unit leaders' and unit teachers' mean scores on Representation showed no significant difference.
3. Regarding Ancillary Question Three, the t-test for comparison of unit leaders' and unit teachers' mean scores of the effectiveness measure showed no significant difference.
4. In summary, the differences in mean scores of unit leaders and of unit teachers on measures of the three main variables showed them to be significantly different on only one variable, decision involvement. Almost uniformly, the variable, representation was higher than decision involvement. The value of this difference, however, did not reach the level of significance except in this one instance.

There were four sources of subsidiary information, a stepwise regression analysis, a factor analysis, descriptive statistics on the three measures, and a cross tabulation of high-low response on the three main variables.

The salient points of the stepwise regression analysis were as follows: The stepwise regression identified the most significant contributor of variance to the dependent variable as the scale three scores of unit teachers on Decision Involvement. Scale III items were labelled in the factor analysis as Powerful Curriculum decision items. The percentage of variance accounted for by this variable was 49.82. The next three independent variables to enter the regression equation were frequency of I & R unit meetings, representation (Scale II), and number of pupils in unit. These three variables were significant when they entered the regression equation but each contributed less than 5 per cent to the variance of the dependent variable. When 15 variables had entered, 71.32 per cent of the variance of the dependent variable effectiveness was accounted for.

The following is a summary of the stepwise regression analysis: Stepwise regression analysis upheld the theory that teachers' involvement in decisions which touch their work task (Powerful Curriculum decision items) is related to teacher effectiveness by bringing up this variable as the largest contributor to the variance of the dependent variable, effectiveness of the teaching unit. Number of I & R unit meetings per week, was positively related to effectiveness; number of pupils was negatively related to effectiveness.

The salient points of the factor analysis of the Decision Involvement and Representation Index were as follows: The factor analysis was done on 188 individual responses, a limiting number for that statistical procedure. It upheld the three scales to some extent by grouping the items again into a similar pattern. The factors were labelled as Scale I, Sanctions Rewards, Scale II, Nonpowerful Curriculum, and Scale III, Powerful Curriculum. Test statistics on decision involvement and representation showed lower means on Scale I and Scale III decision items, indicating that they were perceived as decisions in which the IIC was less involved and therefore to a certain extent these decision items were withheld from teacher input.

Cross tabulation analysis may be summarized as follows: High scores and low scores on the three main variables tended to occur together. Scores high on one independent variable but low on the other independent variable did not often occur. Scores high on both independent variables and low on the dependent variable occurred more often than scores low on both independent variables and high on the dependent variable.

Conclusions

The main conclusions from the study were as follows:

1. Extent of involvement in decision making by the IIC was strongly related to effectiveness of the I & R unit.
2. Representation for teachers provided by the unit leader serving on the IIC was strongly related to the effectiveness of the I & R unit.
3. Extent of involvement in decision making and representation together were strongly related to effectiveness of the I & R unit.
4. Extent of involvement in decision making and representation the two independent variables were closely related constructs.
5. Frequency of meetings and total number of pupils in a unit were related to the effectiveness of the I & R unit, but only after accounting for the two main independent variables. These two situational variables did not contribute greatly to the variance of I & R unit effectiveness.

6. Teachers perceived themselves to be more fully represented than involved in the decision-making process.
7. Extent of involvement in decision making by the IIC schools was on the average perceived by unit leaders and teachers as beyond the stage of providing information--toward the level developing possible alternatives.
8. Representation for teachers as provided by the unit leader serving on the IIC was perceived as moderate by respondents in this study.
9. Effectiveness of the I & R unit was perceived by unit leaders and teachers as between "somewhat effective" to "effective."
10. Extent of involvement in decision hinged on two aspects of decision making. One aspect was where in the decision process were the teachers involved. The latter issue, dealt with in this study by observing scale scores, was that powerful decisions are not readily transferred to teachers, even in IGE/MUS-E schools. When powerful curriculum decisions were offered to the IIC however, teachers did respond by perceiving their I & R unit to be effective.
11. Conclusions drawn from cross tabulation are as follows: The three main variables were associated in the same categories more frequently so that low decision and low representation scores seemed to predict low effectiveness scores usually. High decision and high representation scores predicted high effectiveness scores, but not quite as well. Perhaps, given considerable decision involvement and good representation, the unit may still

have barriers to effective functioning. These barriers might be unsatisfactory leadership behaviors on the part of the unit leader or total pupil number may be too great for effective unit operation. Some barriers to effectiveness may be still unidentified.

Implications for Practice and Further Research

This section includes the implications for practice in IGE schools which might be drawn from the results of this study. The final portion of the section delineates general suggestions for further research which derive from the present investigation and its findings.

Implications for Practice

To form a picture of the trend of association, there seems to be a strong probability that an effective teaching unit will occur with an IIC that has good decision involvement and members (unit leaders) who are representative of their constituents (teachers). This may be due to the incorporation of teacher ideas, reservations, and needs into the administration of the school, especially in the area of curriculum which touches the teachers' work most. This is the implication of the Getzel-Guba model of educational administration as a social process and the study findings bear this out as the pattern of occurrence of the variables showed.

While it might have been difficult for teachers to separate extent of involvement in the decision process from the level of representation, somehow the two constructs have a small area of separation which may reflect the vicarious nature of participative decision making when the participator shared the decision process through a representative so that the perception of representation was always the stronger since it was firsthand and the perception of decision involvement was slightly reduced since it was secondhand.

The study had implications for practice. They are as follows:

1. In selecting unit leaders for IGE/MUS-E schools, an individual who is open to suggestions and capable of doing a good job of representing colleagues and who is confident enough to seek as much involvement in decision making as possible should be chosen over a less assertive individual.
2. The principal and other administrators who have authority in an IGE school should be willing to allow the IIC to participate as fully as possible in decision making with the prospect of increasing the effectiveness of the I & R unit. The kinds of decisions most related to an effective I & R unit are significant (Powerful) curriculum decisions. It is these kinds of decisions that the administrators must be willing to submit to the IIC in multiunit schools.
3. The total number of pupils in a unit should be maintained at a moderate level to gain unit effectiveness. Unit meetings should be frequent rather than lengthy to accomplish I & R unit objectives.

Implications for Further Research

A sweeping glance backward should be taken at the research done so far on IGE/MUS-E schools. Loose[13] analyzed decisions made by the IIC; Herrick[14] looked at decentralization and teacher motivation; Walter[15] examined adaptiveness and organizational structure; Smith[16] investigated effectiveness of the IIC and the interpersonal relations of its members; Wright started to construct a measure for the different dimensions of decision. All these studies laid a groundwork which should now move out to explore the relationships of variables, already identified and for which measures exist, and the crucial outputs of a school which still need operational definitions and measuring instruments.

Then, contributors to the variance of I & R unit effectiveness as ascertained by research done so far should be summarized. Variables identified in Evers'[17] study were: three measures of unit leader leadership behavior (instrumental, supportive, and participative) and workshop participation. Variables identified in the present study were: extent of involvement in decision, representation, frequency of meetings, and total number of pupils. What variables remain to be identified? Possibilities are cost-expended-per pupil, leadership behaviors of the principal, personality of the principal (authoritarian or non-authoritarian), location of the school (socio-economic setting), and school plant (how facilitative). Other may exist.

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[13] Loose, Doctoral dissertation, 1973.

[14] Herrick, Doctoral dissertation, 1974.

[15] Walter, Doctoral dissertation, 1973.

[16] Smith, Technical Report No. 230, 1972.

[17] Evers, Doctoral dissertation, 1974.

Thirdly, I & R unit effectiveness as the dependent variable might be treated as an intervening variable or by-passed, in favor of more powerful measures, since th[illegible] present instrument is a measure of the joint accomplishment of behavioral objectives set forth for unit teachers, it does not measure the ultimate output or productiveness of a school. Productiveness should, encompass effective change, achievement gain, or increased problem-solving abilities of pupils. Behavior on the part of teachers might be measured and be found in close accordance with role descriptions, and yet ideal role behavior by teachers does not guarantee the accomplishment of pupil gains. In addition, half of the behavioral objectives being measured by the effectiveness instrument, the I & R Unit Operations Questionnaire, are organizational not instructional objectives. Ideally, these organizational objectives could lead to improved instructional behaviors by teachers, but this is a researchable assumption. Using a more direct approach, studies should be designed to identify decision representation, leadership behaviors of the unit leader, workshop participation, frequency of I & R unit meetings, and total number of unit pupils as independent variables and identifying as dependent variables pupil achievement in mathematics and reading, pupils' problem-solving abilities, pupils' cultural learnings, and pupils' self-image. The productivity of a school (pupil change), the dependent variable, could be either narrowly defined or expanded. The measure of these pupil behaviors would be a crucial challenge in such studies.

Third, the decision involvement instrument could be a total study involving a more rigorous investigation of the factor analysis. If the scales could be established to reveal categories indicating a relinguishment of more or less power in decision making to teachers, this measure could be utilized in other studies. For example, what is the relationship between decision involvement in school and union activities, militancy, stability, creativity, and innovation. Another possibility for study, utilizing a refined decision instrument of measure involvement might be a comparison of participative decision making in IGE/MUS-Es, traditional public schools, and Catholic schools.

Finally, research could be done on the interaction and intercommunication patterns among administrators, teachers, and pupils in IGE/MUS-E open schools.[18] There does seem to be a different pattern of visual, verbal, decisional, and instructional interaction in IGE/MUS-E schools. How does this setting and organizational pattern affect administrators, teachers, and pupils? Do hyperactive, less able, average, and gifted pupils react differently as groups? Do teachers and administrators as defineable groups react differently to the multiunit organization and to the communication patterns of an open school? The initial question of such a set of studies might be: Are there significant differences in the communication and interaction patterns of administrators, teachers, and pupils in open IGE/MUS-Es and what are these patterns?

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[18] See Figure 3, p. 8.

In conclusion, it is believed that the present investigation has added substantially to our knowledge of the relationships between decision making, representation, and effectiveness in IGE/MUS-E schools. Hopefully, it will stimulate more research in IGE schools. The concept of participative decision, however, can apply to other types of schools and other institutions. In the long view, since most innovations in education are modified and superseded as new ideas emerge, it is hoped that this operationalization of a participative approach to decision making in schools will not be lost, but will be retained and improved to become a lasting contribution. It is hoped that this and future studies prove that participative decision making does indeed contribute to a more effective educational process.

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APPENDIX A

DECISION INVOLVEMENT AND REPRESENTATION INDEX

Directions: This instrument contains 25 decision items. In the column to the left of each item, indicate your perception of the extent to which your school's Instructional Improvement Committee (IIC) has been involved in making each decision. In the column to the right indicate your perception of the extent to which your I & R unit has been represented by your Unit leader in making each decision. (If you are a unit leader indicate your perception of the representation you have provided.)

Use numerals to indicate

Extent of Involvement of the IIC	Representation Provided by Unit Leader
0 No involvement	0 None
1 Provided information regarding decision	1 Little
2 Developed possible alternatives	2 Moderate
3 Recommended the decision	3 Considerable
4 Made the decision	4 Full

Involvement — Decision Items — Representation

____ 1. The curricular area to be individualized first, second, etc. 1. ____

____ 2. The selection of new teachers for the school. 2. ____

____ 3. The new programs to be implemented within the school. 3. ____

____ 4. The number of new teachers to be hired for each unit. 4. ____

____ 5. The curricular objectives for the total school. 5. ____

____ 6. The amount of planning time provided for unit leaders. 6. ____

____ 7. The outside consultants to be used. 7. ____

____ 8. The priority for the use of unassigned equipment, unscheduled rooms, and multipurpose areas. 8. ____

____ 9. The procedures for reporting student progress to parents. 9. ____

____10. The assignment of students to units. 10 .____

____11. The selection of achievement and ability tests to be used. 11. ____

____12. The inservice activities for staff development. 12. ____

____13. The items to be included in the budget of the school. 13. ____

____14. The procedures for evaluating teachers. 14. ____

____15. The number and size of I & R units. 15. ____

Involvement   Representation

____16. The orientation activities for the new staff members in the school. 16. ____

____17. The criteria and procedures for evaluating instructional materials within the school. 17. ____

____18. The criteria and procedures for evaluating the effectiveness of IGE in the school. 18. ____

____19. The assignment of teachers, student teachers, and aides. 19. ____

____20. The procedures for keeping student cumulative records. 20. ____

____21. The duties of instructional or clerical aides. 21. ____

____22. The methods for interpreting IGE to parents and taxpayers. 22. ____

____23. The guidelines governing pupil conduct. 23. ____

____24. The use of community volunteers in instructional and other school activities. 24. ____

____25. The integration of art, music and physical education into the IGE program. 25. ____

SECTION II

I AND R UNIT OPERATIONS QUESTIONNAIRE

DIRECTIONS: The following items are based upon the performance objectives identified by the Wisconsin R and D Center as being the responsibility of the I and R unit. Please indicate how effectively your unit achieves these objectives by circling the response which most accurately describes, in your opinion, the operations of your unit.

VE = Very effectively
E = Effectively
SE = Somewhat effectively
I = Ineffectively
VI = Very ineffectively

A. Instructional Program

Our I and R unit, in the curricular area(s) to which we are applying the Instructional Programming Model:

VE E SE I VI 1. Develops and/or selects outlines of skills and concepts to be learned which are appropriate to the student in the unit.

VE E SE I VI 2. Develops and/or selects behavioral objectives related to the skill and concept outlines.

VE E SE I VI 3. Specifies materials, equipment, personnel, space and time needed for instruction.

VE E SE I VI 4. Uses a variety of materials for each of the identified instructional objectives.

VE E SE I VI 5. Specifies teacher activities needed for instruction.

VE E SE I VI 6. Preassesses students for attainment of the objectives within the first month of implementing the Instructional Programming Model.

VE E SE I VI 7. Preassesses students' motivational level, learning style, interest and attitudes, and special problems as soon after the preassessment of objectives attainment as the unit staff can conduct the assessment and utilize the results.

VE E SE I VI 8. Places students in initial groups in IGE curriculum areas based on preassessment results regarding achievement, learning style, motivational level, interest, or other relevant variable(s).

GO ON TO THE NEXT PAGE . . .

Experimental Copy/November 1973

VE = Very effectively
E = Effectively
SE = Somewhat effectively
I = Ineffectively
VI = Very ineffectively

9. Uses a variety of student grouping patterns in the course of a particular curriculum such as a) independent study, b) one-to-one (teacher-student), c) one-to-one (student-student), d) small group (3-11 students), e) medium group (12-19 students), f) class-sized group (20-39 students), and g) large group (more than 30 students).
VE E SE I VI

10. Assesses students for attainment of objectives after instruction.
VE E SE I VI

11. Records assessment results in a usable form (e.g., on charts, McBee cards, lists, or individual folders).
VE E SE I VI

12. Conducts evaluation regarding the percentage of students who attain specific objectives.
VE E SE I VI

13. Regroups students at least every two to three weeks based on needs and attainment of objectives.
VE E SE I VI

14. Plans for all I and R unit teachers to teach in the IGE subject-matter areas.
VE E SE I VI

15. Conducts evaluation regarding the effectiveness of the instructional materials currently in use.
VE E SE I VI

16. Conducts evaluation regarding the effectiveness of the instructional techniques currently in use.
VE E SE I VI

17. Conducts evaluation regarding the effectiveness of the assessment materials currently in use.
VE E SE I VI

18. Conducts evaluation regarding the effectiveness of the assessment techniques currently in use.
VE E SE I VI

B. Staff Development

Our I and R unit:

19. Participates in the school's staff development program as planned by the IIC.
VE E SE I VI

20. Participates in the evaluation of the school's staff development plan.
VE E SE I VI

GO ON TO THE NEXT PAGE . . . .

VE = Very effectively
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VI = Very effectively

VE E SE I VI 21. Participates in the evaluation of the intern-student teacher program.

22. Meets together for at least three days prior to the opening of school:

VE E SE I VI a. to make immediate plans regarding student grouping patterns and scheduling for the first one to two weeks of school.

VE E SE I VI b. to make long-range plans regarding our I and R unit's instructional design and goals for the entire year.

VE E SE I VI 23. Meets at least one day per semester when children are not at school to extend IGE planning into other curricular areas.

C. Organizational Operations

Our I and R unit:

VE E SE I VI 24. Schedules unit meetings regularly.

VE E SE I VI 25. Schedules at least two hours per week with one hour in a single block to plan for instruction.

VE E SE I VI 26. Holds unit meetings during the regular staff working day.

VE E SE I VI 27. Requires the unit leader, unit teachers, interns, and student teachers assigned to the unit to attend unit meetings.

VE E SE I VI 28. Prepares and distributes an agenda to all personnel involved in the meeting prior to unit meeting time.

VE E SE I VI 29. Has its unit meetings chaired by the unit leader.

VE E SE I VI 30. Focuses discussion on agenda topics at unit meetings.

VE E SE I VI 31. Has consultants, teachers, IMC director (librarian), aides, and others attend unit meetings at our request.

VE E SE I VI 32. Keeps minutes of unit meetings.

GO ON TO THE NEXT PAGE . . . .

Experimental Copy/November 1973

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VE E SE I VI 33. Distributes minutes of unit meetings to total unit staff, the IIC, and others who attend unit meetings.

VE E SE I VI 34. Holds goal-setting meetings at least once per semester.

VE E SE I VI 35. Holds curriculum design meetings at least once per quarter.

VE E SE I VI 36. Holds meetings to evaluate instructional units, programs, and unit operations at least once per quarter.

VE E SE I VI 37. Holds grouping and scheduling meetings at least once every two weeks.

VE E SE I VI 38. Holds meetings whenever necessary to deal with immediate problems.

VE E SE I VI 39. Evaluates the flexibility of the schedule at least once per quarter.

VE E SE I VI 40. Assesses each unit member's expertise in subject matter at least once per year.

VE E SE I VI 41. Assesses each unit member's expertise in instructing various sizes and kinds of groups at least once per year.

VE E SE I VI 42. Provides at least five hours per week released time from instruction for the unit leader to plan, manage, study and conduct research.

VE E SE I VI 43. Provides at least one hour per week released time from instruction for teachers to plan, study, and conduct research.

VE E SE I VI 44. Assigns aides (instructional and clerical) tasks according to broad guidelines established by the IIC and/or specific guidelines established by the unit.

VE E SE I VI 45. Assigns each teacher a specialization in a curriculum area, or teaching styles to develop, so that he can act as a resource person to the unit.

VE E SE I VI 46. Identifies each student in the unit with a teacher who monitors his progress during the year and takes initiative as required in the IGE subject-matter areas.

GO ON TO THE NEXT PAGE . . . .

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I = Ineffectively
VI = Very ineffectively

D. School-Community Relations

Our I and R unit:

VE E SE I VI 47. Identifies each student with a staff member for purposes of home-school relations, including conferences and home visits, as well as day-to-day guidance of the student and monitoring of his performance.

VE E SE I VI 48. Reports individual students' progress to parents.

VE E SE I VI 49. Cooperates with the IIC in interpreting the IGE/MUS-E concept to parents and residents in the school attendance area.

VE E SE I VI 50. Cooperates with the IIC in utilizing volunteer community personnel (e.g., parents, other adults, high school and college students, and people with special expertise) in the instructional program and other school activities.

GO ON TO THE NEXT PAGE . . . .

BACKGROUND DATA FORM

FOR UNIT TEACHERS:

Name ____________________ School ____________________

Identify your Unit ____________________

FOR UNIT LEADERS:

Name ____________________ School ____________________

Unit Information

1. Identify your unit ________________
2. How many permanent staff teachers including yourself are there in your unit?
   ____
3. How many formal unit meetings does your I&R unit have per week?
   ____
4. How many pupils are there in your I&R unit? ____________

Unit Leader Information

1. How much release time each week do you, as Unit Leader, have for activities related to your I&R unit (please do not count time spent in IIC meetings)?
   - None ____
   - 0 to ½ Hour ____
   - ½ Hour to 1 Hour ____
   - 1 Hour to 1½ Hours ____
   - 1½ Hours or More ____
2. Indicate your degree status
   - Bachelor's degree ____
   - Master's degree ____
   - Ph.D. degree ____

APPENDIX B

CONSECUTIVE NO. OF CALL ____________ (PHONE CALL RECORD SHEET)

RANDOM NO. __________

SCHOOL ____________________________

PRINCIPAL ________________________

ADDRESS ________________________

____

PHONE ___________

DATE OF CALL _____________

CONTACT PERSON ____________________

UNIT DESIGNATION OURS ________________

THEIRS ________________

TEACHERS IN UNIT __________

GRADES IN UNIT __________

QUESTIONS RAISED

DECISION:

COMMENT:

the
Wisconsin
Research and Development Center
for Cognitive
Learning

the University of Wisconsin · 1025 West Johnson Street · Madison, Wisconsin 53706 · (608)262 - 4901

Dear Principal:

Thank you for agreeing to assist in gathering data for my study on the decision making process in IGE schools. As we discussed on the telephone, the unit leader and teachers in Unit ____________________ (randomly selected--no substitutions, please) are to provide the data. Your function is to call the group together, provide a brief description of the study, distribute the instruments, explain the procedures for responding, and return the completed questionnaires. The accompanying sheet provides information and describes the procedures to be followed.

Yours is one of about 70 schools participating in the study. No individual or school will be identifiable in the report. No comparisons or other evaluations will be made. The results will be published by the Center as a Technical Report, and a copy will be sent to your school in your name. The report will also be available to a wide audience through the ERIC system.

The Center appreciates your participation, and asks that you express that appreciation to each member of the unit. Providing such data is a significant professional contribution, and almost always requires a personal effort and commitment from each respondent. The Center is often without an effective means to express recognition and appreciation to individuals such as those in your building who will respond. Please do so on the Center's behalf.

Most sincerely,

Connie Nerlinger

CN:ad
Enc.

the
Wisconsin
Research and Development Center
for Cognitive
Learning

the University of Wisconsin · 1025 West Johnson Street · Madison, Wisconsin 53706 · (608)262 - 4901

INFORMATION AND PROCEDURES

1. Assemble the members of the appropriate unit for a meeting to distribute and complete the questionnaires. 30-45 minutes should suffice.

2. Announce the following points about the study:

   - its purpose is to investigate relationships between representation of teachers in their IIC, the decision-making process in the school, and the perceived effectiveness of the unit
   - who is doing the study...Connie Nerlinger, doctoral candidate in Educational Administration at UW-Madison, working under Dr. James Lipham, Principal Investigator in the area of Organization for Instruction and Administrative Arrangements at the Wisconsin R and D Center for Cognitive Learning
   - who is participating...about 70 randomly selected units in IGE schools across the country
   - to whom will the results be available...our school will get a copy of the final report. Results will also be disseminated through ERIC.

3. Distribute the following to each respondent:

   - one background information sheet
   - two questionnaires, one green and one yellow
   - one sealable 9 x 12 envelope

4. Give the following oral instructions:

   - each person is to complete all three forms, to seal his/her completed forms in the envelope, and get the envelope to you for forwarding
   - read and follow written instructions carefully
   - respond independently...the study seeks individual perceptions, so, once the questionnaires are distributed, respondents are to complete the forms without discussing any of the items

5. Place all the envelopes containing the completed forms in the large return envelope and send them to Room 562, R and D Center, 1025 W. Johnson Street, Madison, Wisconsin 53706.

the
Wisconsin
Research and Development Center
for Cognitive
Learning

the University of Wisconsin · 1025 West Johnson Street · Madison, Wisconsin 53706 · (608)262-4901

DIRECTIONS

1. Assemble the unit leader and teachers of the specified unit (_____) for a meeting to fill out the questionnaires.

   Note: This unit was chosen by a random process and should not be replaced by any other unit.

2. Distribute the set of two questionnaires to each member of the unit, including the unit leader. Also hand out the background information sheet and the envelopes into which the completed questionnaires will be placed.

3. Instruct the unit leader and teachers to fill out the background information and to answer the questionnaires according to their perceptions alone, attempting to be frank and careful. Tell them to put the materials into the envelope provided and to seal it.

4. Ask the unit leader to be responsible for making sure the teachers have all returned their envelopes, which may then be placed into the large self-addressed envelope which is to be returned to the principal.

5. Return the large envelope containing the total unit response to the R and D Center in Madison, Wisconsin. (Principal is responsible).

APPENDIX C

COMPUTER PROGRAM FOR CORRELATED MEANS

Donald N. McIsaac

Donald N. McIsaac, Program To Obtain T-tests on Correlated Means

```
@RUN HERLINGER,40479,29812104B3,1,50/1000
@FOR,IS   .TTEST
FORTRAN-MACC 1.145-05/21/75-21:49:40 (,0)          TTEST
00101        1.        1      READ(5,100,END=99)XM1,XM2,SD1,SD2,COR,XN
00111        2.      100      FORMAT()
00112        3.               SEM1=SD1/SQRT(XN-1.0)
00113        4.               SEM2=SD2/SQRT(XN-1.0)
00114        5.               SDM=SQRT(SEM1**2+SEM2**2-2.0*COR*SEM1*SEM2)
00115        6.               T=(XM1-XM2)/SDM
00116        7.               PRINT 101,XM1,XM2,SD1,SD2,COR,XN,T
00127        8.      101      FORMAT('0',4F8.3,F8.6,F8.0,F8.4)
00130        9.               GO TO 1
00131       10.       99      STOP
00132       11.               END

        END OF COMPILATION:          NO  DIAGNOSTICS.
@XQT
MAP 017P-05/21-21:49
```

Data Needed: Mean(1) Mean(2) St. Deviation (1) St. Deviation (2)

Correlation between Variables, and Number of Observations

Formula:

$$t = \frac{M_1 - M_2}{\sqrt{\left(\frac{SD_1}{\sqrt{N-1}}\right)^2 + \left(\frac{SD_2}{\sqrt{N-1}}\right)^2 - 2r_{1.2} \cdot \sigma_{M_1} \cdot \sigma_{M_2}}}$$

FORMULA USED FOR CONTINGENCY TABLE

a	b
c	d

$$X^2 = \frac{N \left(\left| ad - bc \right| - N/2 \right)^2}{(a+b)(c+d)(a+c(b+d)}$$

Yates correction for continuity included.

(Taken from Statistics by William L. Hays. New York: Holt, Rinehart and Winston, 1963)

PROGRAM TO SELECT SCHOOLS AND LIST UNITS

FOR RANDOM SAMPLING

```
'RUN MCISAC,1636,3034,1
'ELT,I MCISAC.CONNIE
       DIMENSION IN(13)
C      READ SCHOOL AND UNIT RECORD
C      POS 1 = SCHOOL ID                    (CARD 1 COL 1-3)
C      POS 2 = FULLY UNITIZED               (CARD 1 COL 8)
C      POS 3 = NO OF UNITIZED               (CARD 1 COL 9-10)
C      POS 4 = UNIT 1 GRADE SPAN            (CARD21 COL 43-44)
C      POS 5 = UNIT 2 GRADE SPAN            (CARD21 COL 59-60)
C      POS 6 = UNIT 3 GRADE SPAN            (CARD21 COL 75-76)
C      POS 7 = UNIT 4 GRADE SPAN            (CARD31 COL 19-20)
C      POS 8 = UNIT 5 GRADE SPAN            (CARD31 COL 35-36)
C      POS 9 = UNIT 6 GRADE SPAN            (CARD31 COL 51-52)
C      POS10 = UNIT 7 GRADE SPAN            (CARD31 COL 67-68)
C      POS11 = UNIT 8 GRADE SPAN            (CARD41 COL 19-20)
C      POS12 = ACTIVE IIC                   (CARD41 COL 21)
C      POS13 = IPM IN ONE AREA              (CARD41 COL 44)
       I=0
       IPOP=0
90     I=I+1
       READ(5,100,END=99) IN
100    FORMAT(I3,4X,I1,I2/42X,I2,14X,I2,14X.I2/18X,I2,14X,I2,14X,I2,14X,
      1I2/18X,I2,I1,22X,I1)
C      IS THIS A FULLY UNITIZED SCHOOL
      IF(IN(2).NE.1) GO TO 90
C      DOES THIS SCHOOL HAVE IPM IN ONE AREA
      IF(IN(13).NE.1) GO TO 90
C      DOES THIS SCHOOL HAVE AN ACTIVE IIC
       IF(IN(12).NE.1) GO TO 90
C      DOES EACH UNIT HAVE A GRADE SPAN GREATER THAN 1
       ICNT=IN(3)+3
       DO 10 I1=4,ICNT
       IUNIT=I1-3
       IF(I1.GT.11) GO TO 11
       IF(IN(I1).LE.1) GO TO 10
11     WRITE(10) IUNIT,IN
       IPOP=IPOP+1
    10 CONTINUE
       GO TO 90
90     N=I-1
       PRINT 101,N,IPOP
 101   FORMAT(1H1,I5,' RECORDS READ'/1H ,I5,' UNITS IDENTIFIED')
       END FILE 10
       REWIND 10
       DO 12 I=1,IPOP
       READ(10) IUNIT,IN
12     WRITE(6,102) I,IUNIT,IN
102    FORMAT(1H ,15I5)
       STOP
       END
'FOR,U MCISAC.CONNIE,.CONNIE
'FIN
```

Donald N. McIsaac

APPENDIX D

SCATTERGRAM OF CORRELATION TO TEST HYPOTHESIS ONE

```
CORR C1 C3

      THE CORRELATION COEFFICIENT BETWEEN COLUMN  1 AND COLUMN  3 IS    .
700
--
PLOT C1 C3

 -- PLOT C1 C3
                C1
             115.+
                 -
                 -
                 -
                 -                                     ◆          ◆
              85.+                        ◆            ◆ ◆ ◆◆
                 -                           ◆       2  ◆ ◆   ◆◆
                 -                      ◆  ◆   2◆      ◆ ◆ ◆
                 -                       ◆ ◆   ◆        ◆ ◆
                 -                      ◆ ◆  ◆  ◆       ◆   ◆
              55.+                ◆    ◆  ◆◆ ◆ 2◆
                 -                 2        ◆◆
                 -                            ◆
                 -        ◆
                 -
              25.+                    ◆
                   +---------+---------+---------+---------+---------+C3
                90.                 150.                210.
                          120.                180.                240.

 --
```

Obtained on interactive terminal with Program Minitab.

HISTOGRAMS OF 3 MAIN VARIABLES

INDEPENDENT VARIABLE: DECISION INVOLVEMENT

```
HISTO C1
     COLUMN  1  MAXIMUM      92.8000  MINIMUM      27.6700

     MIDDLE OF   NUMBER OF
     INTERVAL    OBSERVATIONS
         30.0            1   *
         35.0            1   *
         40.0            0
         45.0            3   ***
         50.0            3   ***
         55.0            6   ******
         60.0            5   *****
         65.0            6   ******
         70.0            4   ****
         75.0            9   *********
         80.0            4   ****
         85.0            4   ****
         90.0            1   *
         95.0            1   *
HIST C2
```

INDEPENDENT VARIABLE: REPRESENTATION

```
     COLUMN  2  MAXIMUM      96.5000  MINIMUM      31.0000

     MIDDLE OF   NUMBER OF
     INTERVAL    OBSERVATIONS
          30.            2   **
          40.            1   *
          50.            4   ****
          60.           10   **********
          70.            8   ********
          80.           11   ***********
          90.           11   ***********
         100.            1   *

HISTO C3
```

DEPENDENT VARIABLE: EFFECTIVENESS

```
     COLUMN  3  MAXIMUM     229.5000  MINIMUM     110.5000

     MIDDLE OF   NUMBER OF
     INTERVAL    OBSERVATIONS
         110.            1   *
         120.            0
         130.            0
         140.            3   ***
         150.            5   *****
         160.            7   *******
         170.           10   **********
         180.            3   ***
         190.            2   **
         200.            8   ********
         210.            6   ******
         220.            2   **
         230.            1   *
```

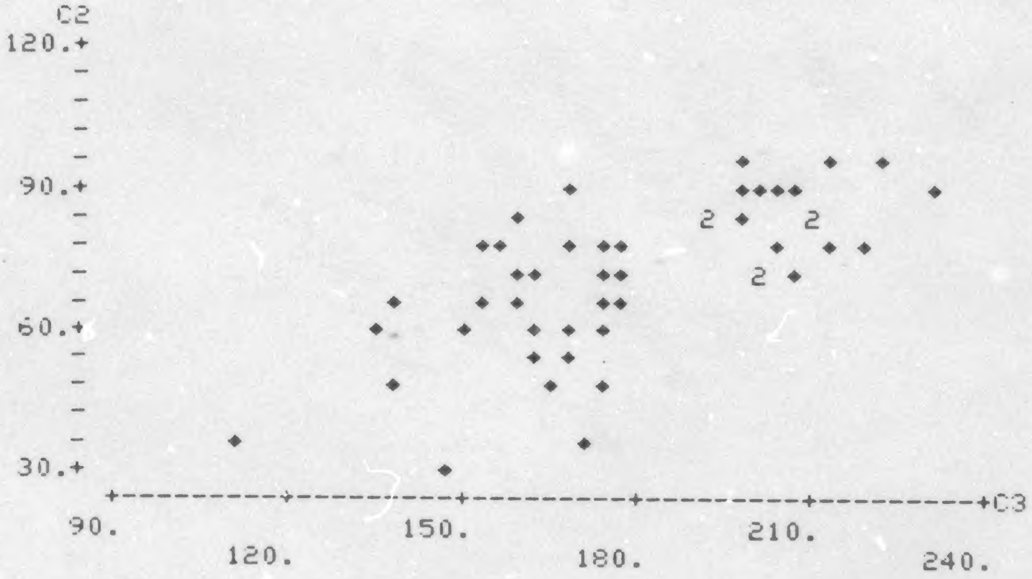
Obtained with Minitab.

SCATTERGRAM OF CORRELATION TO TEST HYPOTHESIS TWO

```
CORR C2 C3

     THE CORRELATION COEFFICIENT BETWEEN COLUMN  2 AND COLUMN  3 IS    .
700
 --
PLOT C2 C3

 -- PLOT C2 C3
```

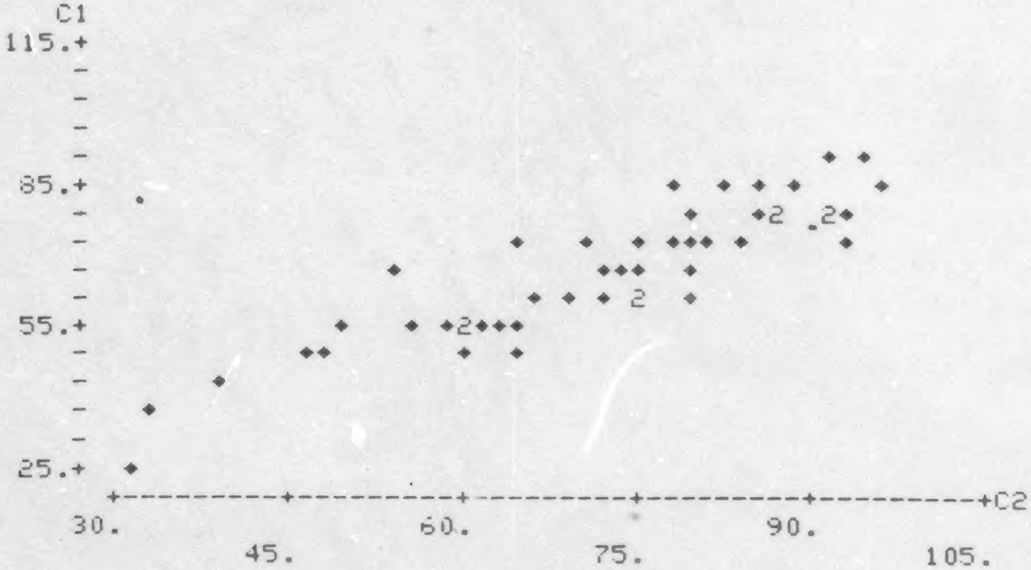


```
--
```

Obtained on interactive terminal with Program Minitab.

SCATTERGRAM OF CORRELATION TO TEST HYPOTHESIS SEVEN

```
CORR C2 C1
      THE CORRELATION COEFFICIENT BETWEEN COLUMN  2 AND COLUMN  1 IS    .
912
 --
PLOT C1 C2
 -- PLOT C1 C2
```



Obtained on interactive terminal with Program MINITAB.

SCATTERGRAMS SHOWING CORRELATIONS

2 INDEPENDENT VARIABLES & THE DEPENDENT VARIABLE

PLOT C13 C4   Scattergram: C13 is Effectiveness Total. C4 is Decision Involvement Total.

```
-- PLOT C13 C4
               C13
             240.+              ◆                  ◆ ◆   ◆
                 -                    ◆  ◆            2   ◆
                 -           ◆        2      3◆25  ◆25  ◆
                 -               2  ◆◆◆ ◆ ◆ 52◆◆2◆ 22◆◆ ◆ ◆◆   ◆ ◆
                 -                ◆◆     2 23 ◆23   32      ◆◆
             180.+       ◆  ◆ ◆ ◆◆  ◆5◆2  2   ◆◆◆◆ ◆     ◆ ◆
                 -           ◆ 2◆    24◆222◆◆332◆ ◆◆◆  ◆
                 -      ◆     ◆    ◆ ◆3◆◆3◆ ◆◆
                 -    ◆ ◆  ◆  2◆ 3◆     2◆ 2 ◆       ◆
                 -         ◆ ◆ ◆3      ◆◆  ◆                  ◆
             120.+            2 ◆  ◆   ◆
                 -          ◆
                 -
                 -          ◆
                 -
              60.+
                   +---------+---------+---------+---------+---------+C4
                 20.                 60.                100.
                           40.                 80.                 120.
--
```

(Done on 188 individual responses, before compositing scores.)

PLOT C13 C8   Scattergram: C13 is Effectiveness Total. C8 is Representation Total.

```
-- PLOT C13 C8
               C13
             250.+
                 -                          ◆    ◆
                 -             ◆            ◆◆◆ ◆◆
                 -                 ◆  ◆◆ 3 ◆◆◆ 2 ◆ 2
                 -        ◆        ◆   324 3◆3◆◆◆◆  ◆
             200.+        ◆        ◆22◆4◆◆◆2 ◆ 5◆  ◆
                 -       ◆    ◆◆ ◆    ◆◆  ◆◆◆2 2 ◆  2
                 -      2   ◆  ◆ 233◆   ◆2 2◆   2
                 -        ◆  ◆2  2◆ 3  4◆2 2
                 -   ◆    ◆  ◆   3 2◆3◆3◆222◆    ◆
             150.+ ◆   ◆  ◆ ◆    ◆◆2     ◆
                 -    ◆ 2◆  5   ◆      ◆◆ ◆    ◆
                 -     ◆ ◆  ◆◆◆◆   ◆             ◆
                 -          ◆◆◆  ◆        ◆
                 -   ◆
             100.+
                 -
                 -   ◆
                 -
                 -
              50.+
                   +---------+---------+---------+---------+C8
                 25.                 75.                125.
                           50.                100.
--
```

Obtained on interactive terminal with Program MINITAB.

SCATTERGRAMS SHOWING CORRELATIONS

2 INDEPENDENT VARIABLES & THE DEPENDENT VARIABLE

PLOT C13 C4   Scattergram: C13 is Effectiveness Total. C4 is Decision Involvement Total.

```
 -- PLOT C13 C4
       C13
    240.+              *                  * *   *
        -                    *  *            2   *
        -            *        2      3*25  *25  *
        -                2  *** * * 52**2* 22** * **   * *
        -                 **     2 23 *23   32      **
    180.+        *  * * **  *5*2  2   **** *     * *
        -            * 2*    24*222**332* ***  *
        -       *     *    * *3**3* **
        -     * *  *  2* 3*     2* 2 *       *
        -          * * *3      **  *                  *
    120.+             2 *  *   *
        -           *
        -
        -           *
        -
     60.+
         +---------+---------+---------+---------+---------+C4
       20.                 60.                 100.
                 40.                 80.                 120.
--
```

(Done on 188 individual responses, before compositing scores.)

PLOT C13 C8   Scattergram: C13 is Effectiveness Total. C8 is Representation Total.

```
 -- PLOT C13 C8
       C13
    250.+
        -                          *    *
        -             *            *** **
        -                  *  ** 3 *** 2 * 2
        -         *        *   324 3*3****  *
    200.+         *        *22*4***2 * 5*  *
        -        *    ** *    **  ***2 2 *  2
        -      2   *  * 233*   *2 2*   2
        -         *  *2  2* 3  4*2 2
        -    *    *  *   3 2*3*3*222*    *
    150.+ *   *  * *    **2     *
        -     * 2*  5   *      ** *    *
        -      * *  ****   *             *
        -           ***  *        *
        -    *
    100.+
        -
        -    *
        -
        -
     50.+
          +---------+---------+---------+---------+C8
       25.                 75.                125.
                  50.                100.
--
```

Obtained on interactive terminal with Program MINITAB.